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Job Mobility, Job Satisfaction, Earnings Profiles and the Exogeneity of Windfalls: Evidence from the UK

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Job Mobility, Job Satisfaction, Earnings Profiles and the Exogeneity of Windfalls - Evidence from the UK.

by

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ABSTRACT

This work consists of four seemingly independent research tasks, using the British Household Panel Survey. Firstly, we endeavour to ascertain the impact of personal characteristics on the concept of Job Mobility with respect to Hour Constraints. Descriptive evidence suggests that almost 40% of British employees are not happy with their working hours. Whether this fact can stimulate job mobility is of our primary interest. We then focus on job satisfaction in attempt to isolate those parameters that can have a decisive effect on it. We exploit a series of subjectively measured covariates in order to tackle unobserved heterogeneity and handle the issue of interpersonal judgements in a more consistent way. Additionally, we estimate job satisfaction profiles to see if the pattern of job satisfaction is different between those employees who changed job and those who did not. The third empirical chapter examines the issues of earnings profiles between the private and the public sector. We argue that the motivational basis for choosing either sector is fundamentally different and this fact should have an impact on the relevant earnings profiles. Public sector workers are expected to exchange a flatter earnings profile for non-pecuniary aspects of their job, including the satisfaction with the work it self. Finally, we look at the probability of becoming self-employed, conditional upon the receipt of a windfall and the consideration of social capital variables. We want to see if the inclusion of the latter can have any impact on the predicting power of windfalls, given that recent research highlighted the relationship between social capital variables and the probability of receiving a windfall.

Chapter 1

Introduction and Data description

1.1 Introduction

1.1.1 Preface

This doctoral thesis is the result of a research effort that took place at the University of Bath between 2004 and 2008. The scope of this presentation is to highlight issues related to job mobility, job satisfaction, earning profiles and windfall gains in the United Kingdom. These topics have already been examined in the literature to a certain extent but our scope is to emphasize several more interesting points and to suggest useful insights, providing (hopefully) interesting extensions.

This research can not be considered finished by any means in the sense that in any work there is always room for improvements. Consequently, we prefer to look at it as a thorough background for the issues under examination and a stable basis for future considerations. For example, parts of the results presented here could be easily extended to accommodate a cross country comparison between countries or group of countries. For instance, the similarities between the British dataset we use (The British Household Panel Survey) and the European Community Household Survey make this task almost unavoidable.

The work I would like to present in this Ph.D. Thesis consists of six chapters. This chapter aims to serve as a brief introduction to the topics we discuss later and to provide a short description of the dataset we use. All the empirical work can be found in chapters two to five. In particular we endeavour to ascertain the impact of personal characteristics on the concepts of job mobility with respect to hour constraints, job satisfaction, the inter-relationship between windfall payments and social capital variables as well as earnings profiles. The last concept is examined under the prism of differences between earnings profiles in the private and public sector. In the last chapter we conclude by summarising the empirical findings and suggesting topics for future consideration.

1.1.2 Chapter Two

The initial scope of chapter two was to examine labour market flexibility, adopting a macroeconomic perspective. This is evident in the first pages of the chapter. However, this target was quickly modified by focusing more on microeconomic data, rather than solely relying on the analysis of macroeconomic indicators. I argue that a rich microeconomic dataset can be very informative thanks to the variety of variables that are collected on an individualistic basis. Such information may include marital status, wages, the type of job, working hours and so forth. Consequently, an appropriate empirical analysis should be in the position to isolate and determine the effect of these personal characteristics on the parameters of interest, in our case, hour constraints.

But why would a researcher be interested in such a relationship? First of all the questions we pose are of general social interest. Working time is an issue that has attracted much debate and controversy in the past and continues to be a top issue in the European agenda when discussions refer to labour market reformations. However we do not aim to examine the sociological or political aspect of the issue by looking how industrial relations evolved through the decades and the impact that this evolution had on working time. Without neglecting the strong influence that institutions play, we approach working time as being one of the determinants of labour supply. We then perceive a subjectively reported dissatisfaction with working time as a disequilibrium point on the labour supply schedule. The extent to which this disequilibrium can be a decisive factor for undertaking labour market action is of our primary concern. We define a labour marker action as job mobility, either within the same firm or between firms and abstract from other means of reactions which can not be easily identified and thus measured. For example, a worker that considers him/her self to be over-employed may develop adverse working behaviour which can include shirking, or/and absenteeism. A striking differentiation we seek is between prime age employees and those employees which are

young in age and have a relative low labour market experience. The reason for this categorization is the idea that the motivational and psychological basis for tolerating not desirable working conditions can be different between these two groups. Young people might be more interested in investing in human capital and thus abstracting from working time considerations. On the other hand, older employees could place more value in the leisure time. Additionally, the exact nature of working time constraints is examined and emphasized since working fewer hours than desired can have different implications for labour market behaviour than working more hours than desired. The former case differs from the latter in a wealth distributional sense since being underemployed yields, in general, less income.

1.1.3 Chapter Three

Chapter three deals explicitly with job satisfaction and opens the discussion to an issue that has lately been in the epicentre of academic dialogue: the extent to which subjectively measured variables can be successfully used in an economic sense. After consulting several studies, we believe that a reasonably logical ground for doing so exists. Consequently, we econometrically estimate the determinants of job satisfaction in Britain, deviating from existing studies in the sense that we also assess the importance of different job satisfaction domains on the general level of job satisfaction. Few studies that have also been conducted on the same lines fail to separate their results from the fact that job satisfaction and other subjective measures can be spuriously related because they all depend on personality characteristics. This is tackled by using panel data techniques which allow personality characteristics like for example neuroticism, optimism, self-esteem e.t.c. to be taken into account. We also provide separate estimates for men and women from a “conventional” job satisfaction specification, after controlling for “reference” income.

In an extension to our empirical methodology, we also consider job satisfaction differences between two consecutive periods. What we are interested to see is if the reasons for a change in the reported job satisfaction are statistically different between young employees and older workers.

Finally, we estimate job satisfaction profiles in order to depict the dynamics of job satisfaction in relation to labour market decisions concerning changing jobs, either within or between employers.

1.1.4 Chapter Four

Chapter four is an attempt to answer if there are differences in the earnings profiles that public and private sector offer. We provide a description of the two sectors of the economy and present the special characteristics that distinguish employment in the public sector from employment in the private sector. We argue that the motivational basis for joining each sector is fundamentally different which makes the choice of employment very much dependent on ethical considerations and the satisfaction that an employee derives from the actual work it self. We explain the upwards sloped earnings curve with reference to the theory of human capital and the agency theory. Finally, we estimate earnings curves for each of sectors and try to explain the reasons behind the differences we encounter.

1.1.5 Chapter Five

The last empirical chapter brings into the epicentre of our interest the issue of self employment. This type of employment has some unique characteristics that make it more desirable for some people and less desirable for some other. For instance, running your own business can be associated with higher profits, self esteem, flexible working patterns, answering to nobody and several other attributes that can enhance job satisfaction. On the other hand, being an entrepreneur can be a risky choice in the

occasion of an economic downturn. It can possibly be expected that people who are highly risk averse would prefer to remain or enter paid employment rather than engaging into entrepreneurship. As it has been suggested in the literature, liquidity constraints are a binding parameter that can prevent potential businessman/women from setting up their own accounts. Furthermore, if a researcher wants to examine how available resources affect the probability of becoming self employed, he/she may fall in an endogeneity trap : there is always a possibility that earnings and the decision to transmit are jointly determined, in the sense that those who are at the same time more able and more willing to become self-employed are likely to have more initial wealth. This aspect is usually handled by examining how non expected wealth (for example a lottery gain) affects the probability of a self-employment transition. Our contribution to the literature is the simultaneous consideration of social capital variables and windfall payments as potential factors that affect the self-employment probability. By doing this we want to see if the latter act independently on this probability since recent research has indicated that the probability of receiving a windfall may be related with factors that can implicitly stimulate a transition to self-employment.

1.1.6 Conceptual interlinks between the four empirical chapters

The four empirical chapters that we present can be considered to be 'self contained' to a high degree. In deed, reading them is not conditional upon having read any of the other chapters. However, this does not mean that they are completely unrelated. Each of them contains elements that are present throughout. In particular, subjectively measured variables are noticeably used in order to bring a more precise behavioural perspective in this study. To be more analytical, in the second chapter we use a covariate which corresponds to a subjective measure of job satisfaction. Survey participants are asked to rank their satisfaction with their job on a one to seven scale. In the third chapter, a more direct attention is placed on the notion of job satisfaction, since we use it as an independent variable. In chapter four, we consider those subjective

elements that may have an influence on both the selection of working sector (public or private) and the wage profile.

Finally, in chapter five we suggest an alternative definition of job mobility (as opposed to change employer), namely the perspective of self employment. Consequently this chapter can be linked to chapter two given that self employment may result in a more flexible working schedule and to chapter three, in the sense that self employment can potentially lead to enhanced job satisfaction, if the entrepreneur highly values those employment attributes that characterise entrepreneurship.

1.2 Data Description

The data set we use in this thesis is the British Household Panel Survey (BHPS) which is being carried out by the ESRC UK Longitudinal Studies Centre with the Institute for Social and Economic Research at the University of Essex. Several other large-scale data sets are available to the social science research community. For example, the German Household Panel (GSOEP), the French Household Panel (ESEML) the European Community Household Survey and the US Household Panel PSID. Such surveys permit research on topics related to a wide range of social dimensions.

Repeated surveys like the above are usually referred to the literature as panel data or longitudinal data and most of the standard econometric textbooks use these two terms almost interchangeably. In fact, the difference between these two terms is small. A longitudinal dataset may also be perceived as repeated cross-section study without disclosing dynamic information on specific individuals. For instance, in the US current population survey, subjects are not tracked over time. Such surveys are useful for understanding aggregate changes in a variable, such as the divorce rate, over time. What makes a panel dataset particularly different from a repeated cross-sectional is the effort

made so that participants in a survey year are also re-interviewed in subsequent years. This can be very informative in identifying the time-varying economic, demographic or sociological characteristics of an individual on several social variables.

The advantages of a panel data structure in a socio-economic survey like the BHPS can be summarised according to Taylor (2007) as follows:

- Panel data allow analysis of how individuals and households experience change in their socio-economic environment and how they respond to such changes
- They allow an analysis of how conditions, life events, behaviour and values are linked with each other dynamically over time
- They allow analysts to control for unobserved heterogeneity
- Because all households member are interviewed, the effects of the interaction of changes at the individual level can be analysed for the whole household or for other individuals
- Because sample members are followed as they leave their original household, panel data will provide unique information of household formation and dissolution

The BHPS started in 1991 with the first wave and at present, the data for wave sixteen are under process. The main aim of the survey is to provide a representative sample of the population of Great Britain living in private households and to follow these individuals over subsequent years in order to provide data for the study of socio-economic change. The same individuals were re-interviewed in successive waves and, in the case of a split-off from original households, all adult members of their new households were also interviewed. Children were interviewed once they reached the age

of sixteen. Consequently, BHPS is considered to be broadly representative of the British population as it changed through time.

From 1997 (wave 7), the BHPS began to provide data for the United Kingdom Household Panel (ECHP). This automatically meant the inclusion of new participants whose first wave would be wave seven. The ECHP came to an end in 2001 since no alternative funding for the ECHP sub-sample was available.

The primary sampling units of BHPS were chosen to be postcode sectors. A postcode sector is a geographical area defined by the first part of the postcode and the first number of the second part, e.g. BA2 7. Taylor (2007) provides a full description of the stratification procedure. There were four stages out of which 250 post codes were selected using a systematic procedure with the probability of selection being proportional to the postcode sector size.

From a starting sample of approximately 5000 individuals in the first wave, more than 10000 were interviewed in 2005. Interviews usually take place on September each year or later in some few cases. This thesis utilises data from the first fifteen waves, namely from 1991 to 2005.

Chapter 2

Hour Constraints, Age and Job Mobility[1]

[1] I would like to thank Dr Tim Hinks and Dr Thanos Mergoupis for useful comments on earlier drafts of this chapter. Comments from seminar participants at the University of Bath are also acknowledged.

2.1 Introduction

The noticeable heterogeneity between European countries and the persistent high unemployment in traditionally strong economies such as France and Germany brings into the epicentre of any discussion issues related to labour market flexibility and the ways in which labour markets are structured across the European Union (EU). The source of this heterogeneity derives largely from issues related to local regulatory environments, since member states retain significant discretion in forming a labour market environment that adjusts to the special characteristics of each country. The levels of employment protection, active labour market policy, unemployment insurance and replacement-ratio differ significantly across countries[2]. At the same time, the labour policy is again not a matter of central European administration, as happens with monetary and fiscal policy. Denmark, for instance, has introduced a unique system of labour market institutions, combining a numerically flexible labour market with a substantial social, income and employment security. Direct comparison to the US labour market performance raises the unavoidable question of whether the source of the observable institutional differences results from the minimum level at which labour market intervention is kept in the US. Employment protection legislation in the US is among the less strict, while other indicators such as the replacement ratio and money spent on active labour market policy are at significant lower levels compared to many EU countries.

Our aim is to ensure that our judgment is based on subjective microeconomic data rather than macroeconomic indicators that could be misleading and lead to biased conclusions according to our political or philosophical beliefs. By "subjective" we mean the type of information that has been generated from direct interaction between an interviewer and a respondent. For example, the reply to the question "How satisfied do

[2] Table (2.1) provides recent information on European level for three variables that readers on labour market flexibility encounter often in the literature. For reasons of comparison we have also included the United States

you think you are from your employment" is without question subjective, since it will certainly vary between individuals. Freeman (2005) emphasizes the need to use individual information as well as simulation techniques in order to shed some light on controversial issues that many times monopolize interest in the economic literature. We thus use the British Household Panel Survey which contains information about the employment and individual characteristics of British workers.

2.2 Labour Market Flexibility

The term "flexibility", although defined and discussed extensively in the literature[3], needs careful attention. Indeed, subjective data could provide an alternative way of approaching the issue, since data collected at an individual level contains valuable information that could give a more precise picture of the various labour market characteristics, particularly from the viewpoint of employees who are both the subject and object of any potential reforms. Weak performance in terms of unemployment reduction and employment stability make flexibility an ambiguous term and emphasize the structural and dynamic aspect of the discussion. For example, mild employment protection (EPL) legislation might be desirable for employers but it does not necessarily guarantee satisfactory employment promotion, (Pissarides, 2001; Auer and Cazes, 2000). In any case, we focus on two characteristics of the labour markets, one from micro data and the other from macro data: Explicitly on the divergence in the working hours that employers and employees desire (implying employment constraints) and implicitly on the sense that the European labour market experience has been far from uniform (Nickell 1997).

Like any other kind of intervention, we are unable to say a priori that any regulation will have an effect exclusively on one side of the market - economic theory

[3] For instance see CBI (2001), Treasury study on EMU (2002) or Gylles Saint Paul (2002)

suggests that it is the labour market as whole that bears the effects and the relative magnitudes are therefore determined by the market forces . For example, an increase in the employers' insurance contributions will vary significantly between employers according to age, tenure and experience. It is expected that the increase will be integrated (negatively) in the compensation of the recently employed workers and of those with low skills. In this dimension, research greatly benefits from the use of longitudinal data and techniques that capture the subjective behaviour elements and implicitly indicate the direction of the potential reformations. It is nevertheless obvious that our conclusions must be seen through the prism of the aggregate economic performance behind which labour market flexibility is hidden.

When talking about labour markets, the term flexibility is a priori believed to have a strong relation to deregulation and in general to the absence of any strong interference (direct or indirect) in the way a labour market functions. (Nickell, 1997; Glyn, 2003). Yet there are contradicting views on this matter, which probably strengthen the obvious conclusion that each case is unique (no golden rules for boosting economic performance) and there are also other factors besides economic ones that rule the behaviour of agents in a country. In OECD's Jobs Report (OECD 1994), the view that unemployment problems arise form inflexibilities in the labour markets is highly supported. But although European labour environment is thought to be rigid, in 2001 9 European countries had lower unemployment than USA. Nevertheless, unemployment problems persist in populous and core monetary union countries as France and Germany. Our interest in this chapter is to see whether the macro-economic view of labour market flexibility, which is based on the analysis of aggregate data, is consistent with the signals that people actually receive from a labour market, apart from the difficulty of getting a job and the relevant compensation. Classic labour supply theory emphasizes on two dimensions, wage and working hours, suggesting that at a given wage an employee can choose the exact number of hours that maximize his utility. In practice, this discretion could be found only in self-employed individuals since most firms offer wage-hours packages on a take it or leave it

basis. However, if employees can easily move either within or between jobs so that to determine his/her desired working attributes then flexibility is at adequate levels. Consequently, we examine to what extent hour constraints can be a job mobility triggering factor for British employees. In addition, we highlight the differences in job mobility between young and prime age employees and examine if these differences could be attributed to hour constraints.

2.3 Supply-Side Flexibility and Working Hours

According to CBI (2002) numerical flexibility is in good levels when firms can adjust the number of workers or hours worked in line with demand. In this sense, employers can choose among a variety of hours their employees will work, or in the extreme case, optimal behavior implies corner decisions for some workers, i.e. layoffs. But a labour market is not necessarily flexible if there is only a good degree of numerical flexibility. An alternative view of employment flexibility refers to the ease with which employees are able to change the aspects of their employment, and it could be seen as an effort to judge labour market flexibility from the supply side. In other words, we want to examine if a deregulated labour market is flexible for *both* employers and employees,

Certain aspects of a job can make it more or less attractive. For example, in the British Household Panel Survey the question about whether an employee is satisfied with his employment considers factors such as the wage, job security, hour constraints etc. Undoubtedly, the relative importance of these characteristics varies among employees. We particularly turn our interest to working hour constraints. People have different preferences towards their desired working hours. Some consider themselves as 'under-employed' while others believe that the hours that they are required to work are far more than the desired ones (i.e. 'over employed'). Undoubtedly the balance between leisure and work is unique for each employee who faces a unique path of discrete choices based

on personal characteristics, and it is also affected by various exogenous factors. The working patterns in European Union concerning the working hours are governed by the relative regulatory mechanism. The European Working Hour Directive (EWTD) that has been embodied in the domestic labour law of EU countries, sets a ceiling of an average 48 hours per week to the number of hours an individual is required to work. However, it is a common phenomenon that workers are unofficially and indirectly asked to work more than what the law dictates[4]. Thus, those who are self-characterized as "over-employed" can be distinguished into two categories: The first consists of those who would be happy with the EWTD hours but due to employment requirements are forced to work more. The second consists of those whose actual working hours are in line with regulations but not with their preferences towards less employment. In both cases employment flexibility, as it is perceived from employers, is inadequate but for different reasons. Stewart and Swaffield (1997), using British Household Panel Survey (BHPS) data, provide evidence in favor of the hypothesis that individual job insecurity, fear of redundancy, and a scarcity of alternative job opportunities enables firms to force those in employment to work more hours than they would otherwise wish at the prevailing wage. A flexible labour environment could ensure that those who are dissatisfied with their working hours could easily move to a job closer to the working hours they wish. Ideally, this job change would occur within the same firm.

More official control and monitoring aiming at reducing involuntary over employment would be beneficial for workers who are unemployed, as firms would have to hire more employees in order to cover their needs. Alternatively, an employer could fire unwilling workers (if you consider an over-employed worker unwilling) and hire willing workers. The exact direction and magnitude of a firm's response cannot be easily predicted. It is associated with the nature of the firm's activities, the needs for skilled or unskilled workers, the investment on human capital and the degree of the employment

[4] Additional working effort in the form of non-paid overtime can also be provided voluntarily as an attempt to increase the promotion likelihood within the same employer. See Landers et al. (1996) for a model featuring incentives to promote only associates who have a propensity to work hard.

protection regulation. In a low unemployment environment, the labor market could balance more effectively without the need for significant governmental intervention as employees would be in a stronger position to bargain not only for higher wages but also against lower paid (or even non paid), over-working.

Moving to a less hours job could be either a discretional choice or a necessity. For example, women with school-age children may prefer part-time employment given their household and family constraints. In this occasion employees cannot be described as under-employed since this type of employment suits them best although they work less than the typical average employee. On the other hand, there are people who work fewer hours than the average, simply because they have difficulties in finding a way out to full-employment. In 2004 the proportion of part-time workers in the UK who were in part-time work because they could not find a full time job was 5.5 per cent, compared to an overall EU average of 14.4 per cent, although with a range from 2.4 per cent in Austria to 41.7 per cent in Greece. (See Table 2.2).

2.4 Hour constraints and Job Mobility

A number of authors have provided evidence that the actual hours that people work are not in line with their preferences, at least for a significant portion of the labor force. Bell and Hard (1998) examine over employment in Britain from 1975 till 1994, Kahn and Lang (1995) using a survey sample for Canada, find that underemployment is prevailing and in general hour constraints are common among a substantial fraction of the labor force (two out of five employees). This study, although static, gives useful insights and heads our discussion towards interesting routes. Boheim and Taylor (2004) report that over-employment is more common in the UK amongst workers, something that is also verified by Blundell et. al. (2005). In addition, the latter study also takes into consideration the compensating wage differentials when a job does not satisfy the worker's hour preferences. Souza-Poza and Hennebeger (2002) provide an empirical

analysis of hour constraints in twenty one countries using 1997 data from the International Social Survey Program (ISSP). They find that underemployment is prevailing in most countries with the noticeable exceptions of Denmark, Norway and Switzerland and U.K. Euwals (1999) adds to the working hour constraints literature considering a female sample from the Dutch socio-economic panel. He finds that within firms mobility driven by hour constraints is relatively low between women. Interestingly, there is scarcity in the literature concerning the issue of working hours constraints for young employees. On the contrary, other issues of the youth labor force have been investigated, for example technological progress and training (Bartel and Sicherman, 1998), job mobility in relation to wage differentials (Flinn, 1986) or the general impact of the young workers in the labour market (Shimer, 2001)

The purpose of this chapter is similar to the existing studies: To examine labor market mobility but in relation to working hour constraints. However, instead of looking at differences between male and female employees, we base our analysis on a young-prime age worker comparison. The distinguishing features of young workers from a sociological and psychological point of view have been outlined elsewhere (e.g .Barling & Kelloway, 1999). Here we are interested particularly in the characteristics of the youth labour force that are related to the labour market. If anyone questions the rational behind this categorisation he/she should first have a look at the unemployment rates. These figures reveal that unemployment for young employees is much higher than unemployment for prime age employees, According to Eurostat, for the fifteen EU members in 2005, youth unemployment rate was 16.7% compared to an average 6.6% for prime age employees. For the UK, the relative figures were 12.9% and 3.3% respectively. Consequently we would be interested to see if apart from the unemployment rates, differences can be also found in employment constraints and the ability between the two groups to change job in order to alleviate those constraints.

Although employees in EU consider the hours they work[5] as a crucial aspect of their working life (Eurobarometer, 2001) we are not sure whether this element can be either a necessary or sufficient factor that could stimulate labour mobility especially for the young employees. We try to approach the above question by examining the degree of young employees' ability to move freely along their supply curve and determine their desired working patterns in terms of the hours they work. In this point some considerations arise: Kahn and Lang (1995) report hour constraints by tenure and conclude that the desire to work fewer hours increases with tenure and that the desire to work more hours declines with tenure. Assuming that young employees are generally low tenure employees, this implies that young people would generally be underemployed. Theoretically this can be debatable if someone considers that the value of the marginal product of a worker declines with tenure. If this is the case, at the early stages of employment the value of the marginal product exceeds the given wage and employees would like to work less. Later, when the marginal productivity falls, a worker would wish to work more hours. Hour constraints that young employees face can also be linked with the employment protection legislation. If strong EPL exists, this generally works in favor of prime age males and against young workers and prime age women, (OECD, 2004). Young employees would thus find it more difficult to respond to over-employment which is imposed by employer's preferences.

2.5 Data

Our data consists of the first thirteen waves of the British Household Panel Survey (BHPS) covering the period from 1991 to 2003. We use an unbalanced panel and since we are interested in the working hours, all self-employed have been excluded as, by definition, they have more freedom in determining their working patterns. Individuals aged less than 18 are also not included in the analysis primarily because although they might be working, are still not in a sustainable employment path, can be financially

[5] See Oswald (2002) for a summary on Job Satisfaction within EU Employers

dependent and could therefore contribute to biased conclusions. We have not excluded people over 60, provided they are on employment and not retirement, but we have eliminated those who work in the armed forces. Employers over 65 years old are also included, but they are a very tiny fraction of the whole sample, around 0,60%. Finally, any respondent should have questioned at least two consecutive times. This restriction is obvious since we want to capture labor market transitions between two consecutive periods. The question we are particularly interested in is the following: "*Thinking about the hours you work, assuming that you would be paid the same amount per hour, would you prefer to work fewer hours, work more hours, or the same number of hours*?" From how the question is posed it guarantees that respondents understand that any reduction in hours worked would be associated with a proportional fall in earnings and thus prevents them from making assumptions about variations in their labor income. Those who prefer to work more are classified as underemployed, those who prefer to work less are classified as over-employed while respondents happy with their existing working hours are classified as unconstrained. If the answers to these questions are associated with the special characteristics of each respondent and the easiness of moving between jobs, there can be some implications, which both influence labor supply and policy making. Strong employment protection is usually an effective shield against unfair dismissals, discriminations and expropriation of the labor force. However, if employment protection and other employment rights are based on a specific length of job tenure, then employees would be especially reluctant to move between jobs and hence define the most preferred for them hours-wage trade off.

2.6 Hour Constraints for Young and Prime Age employees

For the BHPS sample across waves 1-13, it seems that a substantial portion of the labour force is not happy with their working hours. As Table 2.3 shows, almost 40% percent do not supply the hours of work they would prefer, with 32.4% wishing to work

less and just 7.49% wishing to work more. Furthermore, if we consider separately young and prime-age employees, far more young people wish to work more hours at the prevailing wage while there is also significant difference in the percentages of people declaring themselves to be unconstrained.

Table 2.3
Preferences over working hours, BHPS , 1991-2003

	Young Employees (<25, n=7981)	Prime Age Employees (>25<65 , n=56156)	Total (n=56156)
work less	20,42% (1618)	34,79% (16630)	32,4% (18248)
work more	13,73% (1088)	6,53% (3119)	7,49% (4207)
unconstrained	65,85% (5275)	58,68% (28426)	60,11% (33701)

Notes : Cross Sectional Sample Weights applied. Chi-Squared Test for independence show that the differences are significant at the 5% level of significance.

Over-employment is for both categories prevailing but with some difference in the relative magnitude. This result can be implicitly compared with the above mentioned findings by Kahn and Lang (1995) if we adopt the assumption that tenure is positively correlated with age. However, in the overall sample from Canada these authors find that underemployment rather than over employment is the dominating feature, which is the opposite of what we have found for Britain.

A different classification can be examined on the basis on whether the hours preferences change according to whether employment is part-time or a full-time.[6] 41% of young employees who hold a part-time job would wish to work more compared to almost 15.2% for the prime age employees. These numbers change dramatically if we consider people working full-time as shown in Table 2.4. For young employees, the percentage drops to 10.9% while for prime employees to 4.1%.

[6] Part time employment is considered for employees who work for less than 25 hours per week and full time employment for employees who work more than 25 hours per week. (Eurostat definition)

Table 2.4
Preferences over working hours by type of job and age category – BHPS 1991-2003

	Young Employees		Prime Age Employees	
	part time	full time	part time	full time
Work less	9,80%	21,7%	11,60%	41,37%
Work more	41,1%	10,9%	15,10%	4,12%
unconstrained	49,10%	67,50%	73,30%	54,51%

The prevalence of underemployment amongst part-time constrained young employees is revealing. Primarily it shows that a significant portion of young people would wish to work more hours, possibly at a full employment and not part time status. One could thus speculate that a substantial fraction of the young labour force is working part-time simply because it cannot find a way into full employment. The impact that this fact has on the labour supply is obvious, since workers are deviating from their optimal labour supply choices and if the part-time job is not directly related to specific skills, the way towards a desirable employment profile becomes more difficult as time goes by. Considering the prime age category, it seems that part-time employment is a discrete choice rather than an obligation as 73.3% of respondents declare themselves as happy with the hours they work (74.5% for women, 63.0% for men). A comment on the higher percentage for women would be that females might prefer part-time employment as it provides the required flexibility for family care household activities. Black (1989) finds that few women use part-time employment as a stepping-stone to full employment while Higgins et al. (2000) find empirical support for the belief that part-time work helps women balance work and family.

2.7 Dynamic analysis of hour constraints for Young and Prime Age employees

Following the analysis of Boheim and Taylor (2004), we also want to see the impact of past year's hour constraints on next period constraints. Obviously, someone can handle hour constraints by changing the hours he/she works. But this is not always feasible as it involves job changing, either within the same employer or between different employers. Table 2.5 shows that between young employees, a 29,5% of those initially under-employed who increased their working time, remained under-employed in the consecutive period as well. At the same time, under-employed young workers who did not alter their working hours remained under-employed at a larger percentage, 36,7%. Evidence for underemployment between t and t+1 are similar between the two age groups. On the antipode, over-employment seems far more difficult for employees to overcome. More than a half of people who are over-employed at t are still constrained at t+1, no matter if they reduce the hours they work and irrespective of how we split the sample according to age. It is also worth noting that 68,7% percent of prime-age workers who are over-employed at t and did not reduce their labour supply, are still facing hours constraints the following period. The same figure for young employees is 52,5%.

Table 2.5
Hour constraints at t+1 by hour constraints at t and changes in working hours between t and t+1, BHPS, 1991-2003 (row %)

	Hour constraints at t+1					
	Young Employees (<25)			Prime Age Employees (>25)		
Hours constraints at t	Over-Employed	Under-Employed	Unconstrained	Over Employed	Under Employed	Unconstrained
Unconstrained at t	16	9.5	73.8	21.6	4.9	73.5
Under-employed at t and increased work hours between t and t+1	14.7	29.5	55.7	16.3	23.6	60.1
Under-employed at t and did not increase work hours between t and t+1	8.3	35.6	56.1	12.7	38.6	48.7
Over-employed at t and decreased work hours between t and t+1	40.6	8.2	51.2	55.7	3.4	40.8
Over-employed at t and did not decrease work hours between t and t+1	52.5	4.3	43.2	68.7	1.6	29.7

Explanations on why many workers (both young and prime age) report them selves happy with the hours they work next period may vary. It could be either because they have moved to a different job offering the same working hours but different wage compensation or simply because they got used to the idea of working more hours than they would ideally desire. For the first explanation, Blundel et.al. (2004) find only partial support for the hypothesis that over-employed or under-employed quitters receive compensating wage differentials if their new job does not satisfy their hours preferences. But such arguments must be treated with caution. An employee can consider his response to whether he feels unconstrained or not independent of a wage promotion. In other words, a wage compensation for working more hours might ease the pain but does not cure the source of the pain which in this case is over employment. For the second explanation, Akerlof and Dickens (1982) using elements from the psychology science describe that people tend to gradually reject situations that could be harmful or unpleasant, making themselves believe that they are not. In psychology, this situation is described under the term “cognitive dissonance”.

Cognitive Dissonance has drawn extensive attention by researchers and is considered to be a dominant issue in the psychology literature. Although the first term "cognitive" does not need much clarification since it could easily be replaced by the word "mental", the second term deserves a more rigorous treatment. Dissonance is used to describe a situation where a person believes that the way he is behaving (or thinking) is not consistent with what could be subjectively or socially (and in a sense objectively) acceptable. For example, people who have been diagnosed with high cholesterol are generally advised by doctors to maintain a low fat diet. However it is very likely that some of them could not resist if they are offered a chocolate cake. Eating the cake leads without doubt to a dissonance since there is an obvious contradiction between the medical perception about what is bad for the health and the final action.

The more interesting part of the theory comes from the observation that people who experience this kind of contradiction have the tendency to create additional reasons or justifications in order to support their behaviour. In the cake example, this tendency could take the form of concluding that additional exercising could compensate for the adverse (in medical terms) choice.

The projection of cognitive dissonance in the labour market is straightforward and the relevant examples can be numerous since they may involve issues that decrease job satisfaction at first place. Consequently, dissatisfaction with the actual work it self, job security or job payment is likely to create a sense of discomfort at the first stages of the contractual relationship. At later stages though the dissatisfied employee is likely to build a conceptual self-resistance by comparing him self to other employees who may be in worse situations or by simply interpret his contradiction in terms of a threat to the self-concept. This could simply take the form of "I am smart reasonable person" or "I made the right decision". In terms of working hours, a dissatisfied employee is likely to experience at first a contradiction or a logical inconsistency since we can hardly expect that he/she would be indifferent to hour constraints. Undoubtedly the extend to which

over-employment or under employment adds to the discomfort that an employer feels from work is very subjective. But assuming that for some employees, hour constraints is a significant source of job distress, cognitive dissonance would suggest that these employees will gradually adopt such beliefs so that to justify the contradictory states.

So far, our discussion suggests that the theory if cognitive dissonance is highly dynamic since it examines how individuals change perceptions over time as a response to exogenous stimulus. An also dynamic psychological perspective can be offered by the theory of "learned helplessness" which was initially suggested by Seligman (1975). For some researchers it can be considered as the polar case of cognitive dissonance. We won't entirely adopt these views since these theories are very broadly defined and someone can easily refer to specific cases where the results may or may not converge. The theory of "learned helplessness" means a condition of a human being or animal in which it has learned to behave helplessly, even when the opportunity is restored for it to help it self by avoiding an unpleasant or harmful circumstance to which it has been subjected. To give an intuitive example, consider a case where passengers in an aeroplane experience a life threatening mid air incident but after some really terrifying moments they manage to land safely. It is very likely for most of the passengers to avoid flying in the future as a result of their traumatic experience. However, for the pilots (who were actually controlling the aeroplane and contributed to the safe landing) this may not be necessarily so. In fact, most of the pilots who have been involved in serious incidents, are quickly back on duty. Projecting this notion into the labour market, the theory of learned haplessness would suggest that an employee, who faces hour constraint and is particularly unhappy with it, will remain unhappy even if this constraint is removed without him or her being actually involved. This could account for cases where dissatisfaction for the job persists, even if someone is happy with all implicit and explicit factors that affect job satisfaction.

For our research purposes, we believe that "cognitive dissonance" can be analytically useful in explaining why those who were constrained in the first place, declared themselves unconstrained in the next period even though they did not alter the number of their working hours. However, "learned helplessness" can not be used explicitly in our framework since in this chapter we only examine the discrete choice to change job and not the persistence of dissatisfaction given that hour constraints have been alleviated. In other words, we look at the ex-ante conditions that led someone to take action and not the ex-post variation of the respondent's subjective beliefs.

Coming back to our dataset, we explore the 13 first waves of the BHPS and we find that 36.7% of employees who became unconstrained at time t+1 happened to have changed job. In contrast, 24.8% of respondents remained constrained at time t+1, even though they had changed job. Of those, almost 69% received a positive wage differential but with seemingly little contribution on the subjective perception about the hours they work.

A more detailed examination of the wage differentials should aim at examining the relative variation in the wage differentials according to whether a job change has occurred – i.e. do those who change job enjoy larger wage increases than those who do not change job. If this is this case, there is a meaningful basis for including the wage compensation as a control variable when predicting future labour market status. Again, the BHPS evidence is revealing. Excluding those who have had a reduction in their annual compensation[7], and also setting an annual upper bound of 10000 pounds in the level of the wage increase[8], we find the following: The average (unconditional) difference in the compensation that job movers between t and t+1 received (at this time we only look up at those who received a *positive* differential) is £405 (19546 cases). In a

[7] Normally this reduction is not in the sense of a wage cut, inflation, increased taxation or insurance contribution can lead the net compensation result to be negative

[8] We do this in order to exclude extreme observations that maybe due to special circumstances like an employee with very specific and hard to find skills.

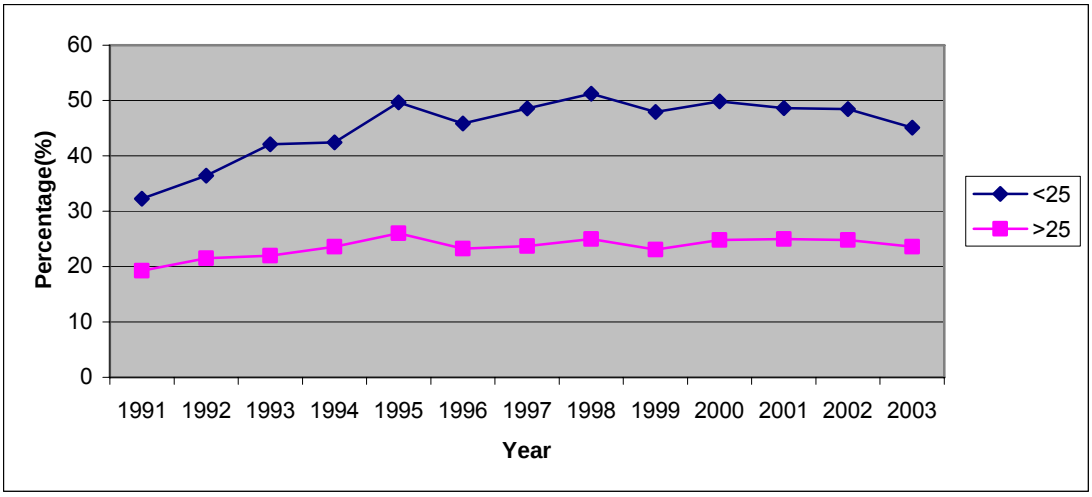
parallel comparison, this figure drops to an average of just £181 for job stayers (9464 cases), thus, a wage promotion is not necessarily associated with job alteration. There are also employees who had negative wage differentials despite changing job. That means that even when annual pay falls, there could be other job attributes that make the new job more attractive and compensate for the income loss. This argument is also supported by Altonji and Paxson (1988).

2.8 Moving within and Between Jobs

An employee would leave his/her job if the utility of doing so exceeds the utility he gains from the existing work less the cost of change. Voluntary termination of an employment relationship has been analyzed both within a job matching and human capital framework (McLaughlin, 1991; Harper, 1995). The BHPS enables us to identify job changes within and between employers, and to investigate to what extent this labour mobility results from any kind of dissatisfaction employees might feel about the hours they normally work. Normally it is not in an employer's interest to loose employees whose tenure, and thus experience, is relatively high. The disruption in the production sequence can be a source of significant loss for the firm since the replacement procedure involves time consumption and firm-specific training (i.e. turnover costs). But an employee might benefit from a displacement if he/she possesses skills that are not only firm specific but also industry specific. In this sense, both parties have incentives to see human capital as a shared investment (Hashimoto 1981). The decision of an employee to terminate his employment with a firm also depends on the existence of alternative choices, his family profile, the probability or expectations of determining alternative working characteristics within the same firm, any possible wage compensation and many other relative individual attributes. For instance, the required time that someone needs to reach his working place is important as someone might consider the inconvenience of travelling a long time to work every day as a contributing factor to his/her overtime

problem. But our initial scope is to ascertain if hour constraints are a triggering factor for a job change. From the first thirteen waves of the BHPS (covering the period between 1991 and 2003), we deduce the following information regarding job change: Taking the sample as whole, approximately 28% did so between t and t+1. From those, 30% were promoted while a 35% changed employer. Figure 2.1 considers job changing between the two age categories, the young employees and the prime age employees, across the 13 waves of the BHPS.

Figure 2.1
Job mobility of young and prime age employees, BHPS, waves 1-13.



As it is evident, job mobility for employees below 25 years old is greater than mobility for employees above this threshold. There is also an upward trend in the percentage of people who change job between two consecutive periods. Thus, the 32.3% of young people who changed employment in 1991, reached a substantial 45.1 percent in 2003. Clearly job mobility is affecting more those people who are relatively new in the labour market. This evidence can be viewed from two sides. Positively, if we assume that a young person given a potential dissatisfaction with certain aspects of his/her job, has discretion in moving either between or within jobs in order to comply with his/her preferences. Moreover, young employees are less constrained by familial considerations

than older employees. Negatively, as a sign of mismatch in the labour market and possible expropriation of young employees. In this case we consider the reasons that did not make the employment matching successful at first place. It could be that some aspects of the job such as working hours, remuneration, the non-wage benefits, were unsatisfactory. Table 2.6 links jobs changing and hour constraints according to age.

Table 2.6
Job Change and Hour Constraints according to age. BHPS, waves 1-13 (column %)

	Employees <25	Employees >25
	Constrained at t-1	Constrained at t-1
No job change	55.04	73.83
Job change between t and t-1	44.96	26.17

It is evident that from all those young employees who declared constrained in the previous period, a 44.96% changed job in the subsequent period. The relevant percentage for employees above 25 years old is just 26.17%. Of course, these figures are not conditional upon personal characteristics or any other control variables. This is exactly what our analysis is aiming at: we want to formally examine if hour constrains are indeed a decisive parameter that can stimulate job mobility.

2.9 Analytical Framework and Estimation Results

2.9.1 Analytical framework

Our analytical framework consists of two parts. In the first part we adopt the approach by Boheim and Taylor (2004) and we identify five (k= 1 to 5) future labour market categories given that the individual was employed in the previous period:

a) Employment within the same employer

b) Out of the Labour Force

c) Unemployment

d) Employment within the same employer but different job (promotion)

e) Employment in different employer

All this categories are mutually exclusive by construction. Consequently we consider the following specification for identifying the impact of age and hour constraints on each of these categories :

$$y_{\kappa,i,t+1} = a_k + \beta_k Under_{it} + \gamma_k Over_{it} + \delta_\kappa age_i + \mathbf{b}_\kappa \mathbf{x}'_{it} + u_{i,t+1} \quad (1)$$

The term at the right side of (1) corresponds to the categories mentioned above. At the left hand side, 'Under' corresponds to underemployment at period t while 'Over' to over employment at period t. Variable 'age' is a dummy variable indicate whether the individual is over 25 years old and **x** is a vector of other control variables. Finally, the last term is the stochastic disturbance.

We differentiate our interest here from the work of Boheim and Taylor (2004) in the following way: Instead of estimating two separate samples for women and men, we first consider the sample as a whole, adding a dummy variable corresponding to whether a person is a prime age employee. In a second specification, we consider a random

effects probit in which the dependent variable receives the value '1' if the employee has changed job between two periods and the value '0' otherwise. In this case the analytical framework (and the estimation) is much simpler but the analytical usefulness of the results is broader since we allow for a less detailed description of the type of job change.

It must also be noted that in a regression for just the sub-sample of young employees we did not encounter any significant results in terms of the effects of either underemployment or over employment. This is not necessarily discouraging, if we particularly consider that the sample size for young employees for categories (b) and (c) is very small and may lead to meaningless or biased results. Secondly, for categories (d) and (e) which identify job mobility, the non significant coefficients serve as an evidence that hour constraints, although present for a noticeable fraction of young employees, are not likely to stimulate job mobility.

The multinomial model we estimate first, examines the extent at which hour constraints can either lead someone out of work (unemployment, out of the labour force) or stimulate job mobility after explicitly controlling for a prime age employee effect and various other characteristics.

The probability that each of the 4 categories (j) will be realized is given by:

$$P_{ijt} = \frac{\exp(a_k + \beta_{k,i} + \gamma_k Under_{it} + \delta_k Over_{it} + \varepsilon_\kappa age_i + b_\kappa \mathbf{x}'_{it})}{\sum_{k=1}^{4} \exp(a_k + \beta_{k,i} + \gamma_k Under_{it} + \delta_k Over_{it} + \varepsilon_\kappa age_i + b_\kappa \mathbf{x}'_{it})} \quad (2)$$

Year dummies are also included to account for the possibility that labour market dynamics could be partially explained by annual unobserved variations, though in general those dummies tend to be insignificant. Finally, since multinomial logit is based on the assumption of the independence of irrelative alternatives (iia) we also account for that

using a Hausman test[9] (Hausman and McFadden, 1984). Results turned out to be strongly insignificant (in favour of Ho) indicating that adding or removing one category doesn't have a relative impact on the relation of any other two categories.

The variables that are used to explain labour market transition apart from hour constraints and age are presented in table 7. Briefly, we control for tenure, academic qualifications, non paid overtime, paid overtime, marital status, overall job satisfaction, full time employment, promotion opportunities, sex, union membership and house ownership.

2.9.1.1 The Effect of hour constraints

Table 2.8 presents the results from the multinomial specification. If constrained individuals have relative freedom in choosing the last two categories (i.e. evidence in favour of job mobility), then there is sufficient flexibility in the sense that employees can move closer to their preferred labour supply curve. Before discussing the regression results, we should remind that labour mobility is much greater amongst those aged below 25 than it is for workers above this age. But the motivation for this mobility can hardly be attributed to hour constraints since hour constraints coefficients (not reported) for the multinomial logit concerning young employees are statistically insignificant.

Considering the whole sample (including both young and prime age employees), our multinomial results emphasise the importance of underemployment as relative motivating force for changing the terms of employment. Although a significant portion of UK employees find themselves working more hours than they would prefer, relatively few would change job due to just this factor. And this result is conditional upon keeping overall job satisfaction constant.

[9] The general idea behind this test is to estimate the logit model twice, on the full set of alternatives and on a specified subset of alternatives. If IIA holds, the two set of estimates should not be statistically different and the null hypothesis is verified under a chi-square distribution.

Consequently underemployment does have some statistical power when it comes to job changing. To be specific, it is a both positive and at significant factor in motivating a job change between two consecutive periods. Although the t statistic of the estimated coefficient is not very large, it is within the decent levels of statistical acceptance and the coefficient gives a taste of the expected direction of change for an underemployed employee. Also, it comes to no surprise that the variable that identifies full time jobs is strongly, negatively and highly significant as part-timers do not always work voluntarily (as it has already been shown in table 2.2) and underemployment is the most observed status for them.

2.9.1.2 The effect of education

Education is included in the specification by having 6 dummy variables corresponding to whether the individual has a higher degree, university degree, teaching or other higher qualifications, A levels, O levels and CSE with reference to any other type of education, including no education at all. The multinomial results indicate that education does not have any power in predicting transition into unemployment or exit from the labour force. This evidence might seem unrealistic but two factors must be taken into account: Investment in education becomes important when transition takes place from unemployment to employment. In the opposite case, even if the young worker is employed within a firm that anyway requires less academic qualifications, the choice is discrete and possibly based on the lack of alternative income sources or/and family support. In this case flexibility is defined by the easiness of finding a qualifications compatible employment.

Our results strongly indicate that education does matter when it comes to employment mobility, both within and between employers. More specifically, having obtained higher education (An MSc or a PhD) does play a significant role, especially when the decision comes to moving between employers (i.e. promotion). To be more

precise, there is a positive and significant coefficient implying that possessing higher education qualifications increases the possibility of changing employer. At the same time, we have to point out that having A-levels qualifications is also positively significant, but at the margin. For within-employers mobility, education at any level is (as expected) a very strong parameter. In all cases whoever obtains a university degree does gain a comparative advantage in having a good discretional power in moving either within or between jobs. Thus, there is a good indication that "investing" in a university qualification provides (apart from a potentially elevated expected average wage) a good degree of flexibility. Mincer (1991) using PSID also argues that education is a key element in affecting labour market characteristics. He found that university education not only does reduce the chances of unemployment but it also associated with higher wages and promotion opportunities.

2.9.1.3 The Effect of tenure

Theoretically, tenure can not be ignored as a variable that affects the possible future labour market status. Human capital framework (Becker, 1962) implies that firms may invest in "on the job" training, expecting increased marginal productivity in future periods. In this sense, an employer would be reluctant to terminate a long employment relationship. Recent evidence for Britain suggests that the more recent the labour market entrant, the more likely the job will end, (Booth et al. 1999). Our results also tend to verify the view that the higher the tenure, the less the chance will be that someone will find him/her self unemployed. However we have to mention two results, one that is unexpected and the other that was quite predictable: Tenure is negatively and significantly associated with promotion opportunities in a job. Thus a long-term employment relationship does not necessarily have positive effects in terms of promotion opportunities. Again we need to interpret this very carefully and explain the possible reasons for this result providing the following arguments:

1) Some times it is not very clear when a promotion takes place and also the term promotion by itself holds a subjective interpretation. A wage

increase or a differentiation of duties can simply not be reported by respondents as a promotion while some times the employer might consider himself having been even demoted.[10]

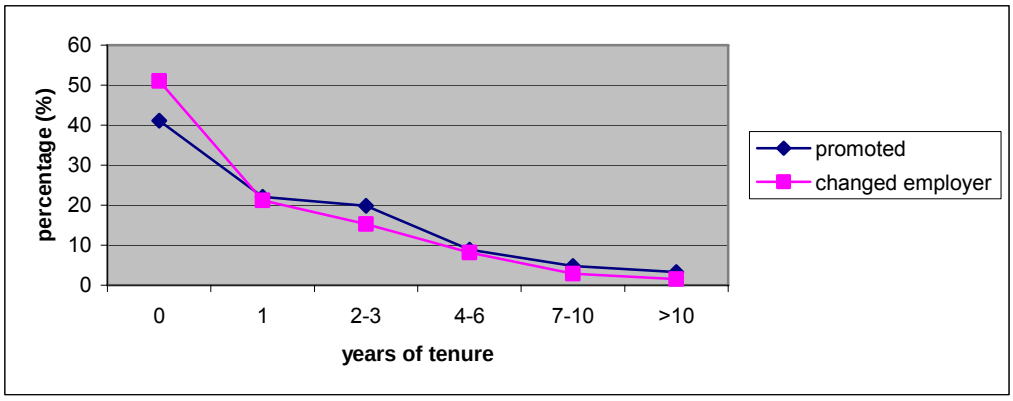
2) Not all the firms have the same hierarchical structure. In some of them we can find many descriptions of job duties with similar characteristics while in others three or four descriptions for the whole job range would be enough. Similarly , not all the firms have the same employers size

3) Finally and maybe most importantly, it would be rational to assume that if we consider the chances of promotion as a function of tenure it would have been a decreasing one but at a severely reduced rate, implying a concave relationship. Getting a promotion in the very first years in the job wouldn't be as difficult as it can be when the tenure increases as more people would compete for (the few) higher positions.

To examine the extent at which our third comment can have any descriptive validity we rely on the BHPS database. Figure 2.2 shows that tenure does have a strong and diminishing effect on the chances of either being promoted or changing employer. Most changes occur within the first years of the employment relationship, even within the first months.

[10] See Gibbons and Waldman (2006) for an excellent study on wage and promotion dynamics.

Figure (2.2)
Incidence of Job change according to tenure



For stayers it is relatively more difficult to alter their status as tenure increases. Comparing also the average compensation that job movers received we find out that those who moved before completing a year in the job received (on average) £311 pounds while workers whose tenure was between 7 and 10 years received £370 pounds.

To conclude with the effect of tenure on the future labor market status, we have provided descriptive justification for the fact that our regression coefficients are at the same time negative and very strongly significant which arises from the very high concentration of job separations around 0 and 1 year of tenure. This should not be interpreted as a sign for flexibility, at least in our terms. It just shows that those who change their employment do so at the very early stages. And it definitely does not mean that whoever desires a different job can easily move towards it. There could also be constrained (by the broad sense) workers who either cannot or do not wish for other reasons to leave their current employment position.

2.9.1.4 The effect of age

Our initial objective was to see whether there would be any significant difference in the explanatory power of the controlling variables (and especially the constraints in working hours) if the sample was restricted to just those who are relatively new in the

labor force. However, by conducting the analysis only for people between the age range 18-25 we did not come up with significant results. To an extent, it was quite predictable for mainly two reasons, one statistical and the other intuitive:

1) Young employees belonging to the first category of our multinomial specification are very few (just 39 for exiting the labor force) so any results would be, without question, biased.

2) When searching for a job, young employees can be expected to place emphasis on job attributes such as compensation, the actual work, opportunities for promotion etc. The importance of dissatisfaction with working hours may appear at a higher age and tenure so this particular factor does not appear to be the reason for job mobility, at least for employees below 25.

By placing a dummy variable indicating whether an employee is over the age 25, we want to see if being a prime age employee gives any additional chances of moving between employment states, in comparison to young workers. In both cases there is statistically significant evidence that the possibility of moving within and between employers is much lower for prime age people, compared to young workers. This comes as no surprise as the mobility of young people is much higher. Changing jobs is also diminishing with tenure (Figure 2.2) and consequently a young person can more easily find him/herself in a new working place but (to mention once more) not due to working hour constraints. Older employees can be more rigid in changing jobs due to firm specific reasons, family considerations or/and the underestimated psychological effect of getting used to a certain daily activity. The internal fear of facing the difficulties of a new start can without doubt become a severe obstacle. Consequently it should have been something more important than working hour constraints to motivate an employee with a considerable age and tenure to change employment.

2.9.1.5 The effect of other factors

In the model specification, many other variables have been introduced so that to make the approach to hour constraints as precise as possible. Although we may have not encountered any predicting power of over-employment, we have come across significant results in terms of the controls that have been used. We have already mentioned job satisfaction, tenure, working full time and part time, age and education. Now we turn our look to wage issues, overtime (paid and non-paid), union membership, family conditions job sector and promotion opportunities. Undoubtedly, many other specification parameters can be used, it is on the researcher's discretion to form the specification in a meaningful and consistent way by highlighting the variables that are more likely to affect the outcome.

The relative compensation that an employer receives in exchange for the amount of labor he/she offers is positively related with a within jobs movement and negatively with a between jobs movement. In other words, an increase in wage increases the chances of an employee to receive a promotion in his/her current working place and decreases the probability for the same employee to change employer. This result can be a supporting argument for the efficient wage theory according to which employers may pay wages above the market clearing levels in order to increase productivity and decrease the quit rates. In addition, it is essential to clarify that the promotion opportunities variable is measured before the actual job change takes place. If this was not the case, an obvious issue of endogeneity would arise since we should normally expect from employees who have just be promoted, to report that enough promotion opportunities exist at their working place.

Union membership is positive for people getting promotion and negative for workers who change employer. It may be seen as a factor that increases job security and thus making the working relationship much more stable. Furthermore, working in the

private sector of the economy also raises the odds for job mobility. Public sector employment may again offer a more stable working environment in which movements between jobs are not so common.

Being married imposes a barrier for between jobs movements, regardless the employment status of the spouse. If the spouse works, then the chances are significantly decreased. This variable is not significant for mobility within the same employer.

An important parameter that is likely to influence a within job change is whether there are enough opportunities for promotion within the same job. The coefficient is positive, extremely well determined and of very considerable magnitude. This result may sound as a tautology but for us is a good sign supporting that subjective variables like this one have an analytically useful content.

Finally, we check if owning a house can have any effect on job mobility. Oswald (1997) and Gregg et al. (2000) show that owning a property does have an impact on labor mobility, in the sense that those who are renting would find it much easier to move for employment purposes. The dummy variable we use to account for house property is insignificant in both types of job change. However, it has a positive effect on the probability of being out of the labour force and a negative effect on the probability of being unemployed.

2.9.2. An alternative probit specification for job mobility

The second part of the analytical framework consists of estimating two probit models (in a random effects setting), one for the sub-sample of young employees and the other for the sub sample of older employees. In this case the depended variable receives the value ‘1’ if the employer has changed job between period t and period t-1 and ‘0’

otherwise. We then regress this dummy variable against a set of explanatory variables, all measured at time t-1. We adopt a less complicated framework than the previous multinomial one, though more broad results can be derived. We use the same set of explanatory variables as before and we want to see the impact that these variables have on the probability of job change, for employees less than 25 years old and for employees above this threshold.

Tables 2.9 summarizes the results from the probit regressions. As far as young employees are concerned, underemployment at t-1 does not have any statistical power in predicting a job change at period t. On the contrary, over-employment significantly reduces the chances for changing job in the next period. At the same time, working overtime (but without being paid for this extra work) is likely to affect the probability of job mobility. Job satisfaction as expected negatively affects the likelihood of changing jobs. All educational categories are non significant while working in the private sector has a significantly positive effect. According to our results, sex does not have any predicting power, at least for the sample of employees who are below 25. Finally, full time work is associated with a reduced probability of a job change while house ownership has a negative and significant coefficient.

In comparison to young employees, we encounter some noticeable differences when we examine the regression results from the sample of workers above 25. To be more specific, it is under-employment rather than over-employment that can statistically explain part of job mobility. But in this case, whoever is under-employed in period t-1 is more likely to be in a different job in the next period. Working full time is negatively affecting job mobility, in contrast to young employees. University education is strongly increasing the probability of being in a different job, working over-time without being paid is not significant and being a male worker is negatively associated to job mobility. Also, a spouse that does not work is a parameter that negatively affects the probability of changing job. Similarities are in the form of job opportunities (negative), working in the

public sector (positive), house ownership (negative), job satisfaction (negative), workplace union (insignificant) and job tenure (negative).

2.10 Conclusion

Our analysis using the BHPS indicates that hour constraints do exist among British employees at substantial levels. Almost 40% of workers do not work the hours they desire, meaning that the labor supply they actually offer is different than the desired one. The purpose of this chapter was to examine if hour constraints can constitute a decisive parameters that can stimulate job mobility. We found good statistical basis supporting that although over-employment is most commonly reported, it is underemployment that has some explanatory power. Furthermore, we split the sample at an arbitrarily chosen age, in order to see if for employees below 25 years old, hour constraints act differently upon job mobility than they do for employees above this threshold. We found evidence that for this particular age group, hour constraints do not contribute significantly to job mobility. Given that young employees' mobility is much higher compared to prime age employees, we conclude that it is driven by other more important for this group parameters. In broad terms, job mobility can be attributed to a continual process of finding an ideal working place. However future research should investigate if apart from hour constraints, young employees differ in any other manner and the relative impact that this may have to job mobility.

Table 2.1

Employment Protection Policy, Unemployment Benefits and Active Labour Market Policies

Country	EPL Index (range: 0-2) (1998)*	Replacement Ratio** (2003)	Expenditure on Active Policies (%GDP)*** (2001)
Austria	1.1	38.9	0.446672
Belgium	1	46.5	1.278109
Denmark	0.7	63.8	1.5820****
Finland	1	54.8	0.941816
France	1.3	61.2	1.297295
Germany	1.65	37.5	1.20692
Ireland	0.5	38.05	1.137705
Italy	2	57.08	0.633805
Netherlands	1.35	70.78	1.736762
Norway	1.55	64.9	0.787231
Portugal	1.94	69.3	0.61****
Spain	1.91	63.15	0.843559
Sweden	1.8	77	1.389294
United Kindom	0.35	18.3	0.37618
United States	0.1	29.5	0.145493

* Data taken from Nickel et al. (2005), originally from Nicoletti et al. (2000)
** Source: OECD. Based on the replacement ratio in the first year of an unemployment spell averaged over three family types.
*** Source: OECD
**** 2000 data

Table 2.2

Involuntary Part-Time employment in Europe

Country	Total Employment	Employees Below 25
Austria*	2.38%	1.07%
Belgium	13.36%	27.60%
Germany	12.40%	16.35%
Denmark	10.48%	5.94%
Spain	17.65%	20.57%
France	18.65%	22.53%
United Kingdom	5.51%	7.77%
Greece	41.69%	38.31%
Ireland	7.30%	7.37%
Italy	27.61%	36.48%
Netherlands*	3.77%	5.68%
Norway	6.95%	7.16%
Portugal	17.08%	32.47%
Sweden	16.46%	24.40%

Source: OECD
* 2003 Data

Table 2.7

Variable List and Definitions

Variable		Definition
Under employment		Dummy variable taking value "1" if the individual wishes to work more hours at period t
Over employment		Dummy variable taking value "1" if the individual wishes to work less hours at period t
Job Tenure		Measures years of work within the same employer
House Ownership		Dummy variable taking value ‘”1” if the respondent owns the property he/she lives in and “0” Otherwise
Job Satisfaction		Corresponds to overall job satisfaction measured between "1" (lowest) and "7" (highest)
Full Time Worker		Dummy variable taking value "1" if the individual works full time at period t
Non Paid Overtime		Dummy variable taking value "1" if the individual works overtime and does not receive overtime payment
Paid Overtime		Dummy variable taking value "1" if the individual works overtime receives overtime payment
Spouse Works		Corresponds to the case where the spouse of the respondent works
Spouse does not Work		Correspond to the case where the spouse of the respondent doesn't work
Higher education		The respondent holds a higher education qualification (MSc, Phd)
University Degree		The respondent holds a University degree
Teaching,hnd,hnc		The respondent has either teaching qualifications or he/she holds a higher national diploma or a higher national certificate
A levels		No university education but A levels
O level		Corresponds to O level education
Cse		Corresponds to a Certificate of Secondary Education
Job Sector		Dummy Variable taking value "1" if the respondent works in the private sector
Union		Union present at working place
Promotion Opportunities		The individual believes that there are enough promotion opportunities in his/her current job
male worker		Dummy variable taking value "1" if the respondent is male
prime age worker		Dummy variable taking value "1" if the respondent is above 25 years old

Table 2.8

Multinomial Results

	Out of Labour Force at t		Unemployed at t		Moving within at t		Moving Between at t	
	Coefficient	T statistic	Coefficient	T statistic	Coefficient	T statistic	Coefficient	T statistic
Variable								
Underemployment	-0.31	0.79	0.14	0.33	0.24	2.82**	0.19	2.54**
Over-employment	0.48	3.26***	-0.39	1.04	-0.03	0.67	-0.077	1.54
Job Tenure	-0.012	0.94	-0.12	2.18*	-0.1	14.71***	-0.2	20.97***
House Ownership	0.57	2.05*	-0.19	0.57	0.06	0.99	-0.25	1.9
Job Satisfaction	-0.075	1.42	-0.29	3.09***	-0.019	1.07	-0.25	16.4***
Full Time Worker	0.6	3.15***	-0.48	1.2	0.76	8.98***	0.05	0.84
Non Paid Overtime	-0.36	2.02*	-0.6	1.17	0.29	5.33***	-0.06	1.01
Paid Overtime	-0.48	2.4*	-0.32	0.92	0.16	3.1***	-0.004	0.08
Spouse works	0.52	1.46	-0.59	1.08	-0.012	0.15	-0.27	2.95**
Spouse doesn't work	0.96	5.52***	-1.72	3.65***	0.06	1.28	-0.09	1.77*
Higher education	0.9	2.14*	-0.87	0.82	0.57	4.27***	0.075	0.51
University Degree	1.1	3.88***	-0.82	1.53	0.68	7.34***	0.34	4.02***
Teaching, hnd, hnc	0.53	1.97*	-1.28	2.7**	0.5	5.86***	0.14	1.82*
A levels	0.48	1.95*	-1.09	2.57**	0.45	5.45***	0.09	1.24
O levels	0.44	1.31	-0.91	1.39	0.52	5.06***	0.09	0.91
Cse	0.97	3.92***	-0.83	1.43	0.21	1.73*	0.17	1.74*
Job Sector	0.37	2.16*	0.37	0.84	0.21	3.8***	0.28	4.61***
Union	0.27	1.65	-0.25	0.73	0.13	2.7**	-0.24	4.66***
Promotion opps.	0.36	2.49**	0.16	0.53	0.94	18.24***	0.05	1.08
male worker	-2.56	10.3***	0.17	0.54	-0.09	1.97*	-0.07	1.49
Prime age worker	-0.58	2.32**	-0.83	2.38**	-0.27	4.07***	-0.38	6.01***
Constant term	-5.17	9.53***	-2.93	2.65**	-3.64	19.70***	-0.24	1.52
Observations	28276							
LR $X^2(128)$	3552.43							
Pseudo R^2	0.0969							
Log Likelihood	-16547.223							
Hausman test for iia	passed		passed		passed		passed	

Notes : Base category is being employed in both periods within the same employer. Specification also includes 12 year dummies. All control variables are measures at t. Reported t values are in absolute value.

Table 2.9

Probability of Job Change: Binomial Random Effects Results

	Employees <25		Employees >25	
	Coefficient	T statistic	Coefficient	T statistic
Variable				
Underemployment	0.11	1.75*	0.19	5.37***
Over-employment	-0.12	2.39*	-0.02	1.07
Job Tenure	-0.2	13.48***	-0.07	33.19***
House Ownership	-0.12	2.4*	-0.09	3.63***
Job Satisfaction	-0.18	10.92***	-0.13	20.1***
Full Time Worker	-0.23	2.88*	0.12	4.77***
Non Paid Overtime	0.13	2.1*	0.011	0.46
Paid Overtime	-0.03	0.66	0.004	0.22
Spouse works	-0.18	0.97	-0.046	1.4
Spouse doesn't work	-0.07	1	0.017	0.86
Higher education	-0.03	0.17	0.18	3.5***
University Degree	-0.06	0.57	0.21	6.23***
Teaching, hnd, hnc	-0.071	0.66	0.1	3.6***
A levels	-0.055	0.51	0.08	3.15***
O levels	0.031	0.24	0.05	1.41
Cse	-0.039	0.28	0.07	1.72*
Job Sector	0.147	2.43*	0.17	7.43***
Union	-0.039	0.83	-0.03	1.56
Promotion opps.	0.094	2.04*	0.13	6.88***
male worker	0.012	0,30	-0.76	3.79***
Constant term	1.27	6.88***	0.026	0.43
Observations	3915		25182	
LR x2(df)	413.45 (31)		2614 (31)	
Pseudo R2	0.0764		0.0894	

Notes : Specification also includes 12 year dummies. All variables are measured at t. Reported t stats are in absolute values. *,**,*** denote significance at 5%,1% and <1% respectively

Chapter 3

Re-examining job satisfaction – Evidence from the UK[11]

[11] I would like to thank Dr Tim Hinks, Dr Thanos Mergoupis and Dr Chrisostomos Florackis for useful comments on earlier drafts of this chapter. Comments from seminar participants at the University of Bath are also acknowledged

3.1. Introduction

In the previous chapter we related job mobility with hour constraints. We looked explicitly at whether constraints in the hours people work can stimulate job mobility. Given that a proportion of the working population does vary its employment status between two periods[12], we endeavoured to ascertain if this mobility was result of "under-employment" or "over-employment" after controlling for various other factors.

In this chapter, we focus explicitly on overall job satisfaction placing it on the left hand side of our analytical framework. The primary scope of this work is to seek statistical justification for the consideration of potential job satisfaction determining variables. Although this task has already been examined in the literature, we offer new insights by considering a set of subjective covariates that aim to capture heterogeneous elements across individuals. We also provide a more extensive list of "conventional" covariates compared to previous studies. Finally, we take advantage of the panel dimension of the BHPS by using the relevant panel data techniques

A particular famous contribution on the interdependence between economics and psychology is due to Akerlof and Dickens (1982)[13]. Using the notion of "cognitive dissonance" they argue that people have preferences not only over the states of the world but also over their beliefs about the states of the world. If we accept for example the fact that some jobs are more dangerous than some other, it is still likely to find workers within a dangerous working place who do not take any precautionary measures for their safety. Projecting this notion into job satisfaction, some workers who might work long hours or face in general adverse working conditions may have a tendency to underestimate their

[12] The relevant information we derive from the thirteen BHPS waves is that 28% of our sample changed job between two consecutive periods.

[13] See also Bruni and Sugden (2007) for a very recent consideration of the relationship between economics and psychology

situation. Obviously such an action, as Akerlof and Dickens (1982) explain, involves a benefit and a cost. The benefit comes from the fact than those who believe that they are reasonably happy with their jobs avoid the constant unpleasant feeling that a certain or many job attributes gives them displeasure. On the other hand, if they convince themselves that they are happy with their jobs they may make costly judgement errors due to the transparency between their beliefs and the true state of the world. This is obvious in the case of a dangerous job where the cost is measured by the probability of being injured or even killed.

A close paradigm from the viewpoint of job satisfaction can be the tendency of some workers to underestimate the fear of being laid off. By doing this, these workers may avoid the constant fear that a low job security working place implies but they still have to face the increased risk of being laid off.

The inclination to underestimate situations or, in Akerlof's and Dickens's phraseology, "to have a preference over beliefs" is certainly varying between individuals. Workers that work in the same firm and face the same working conditions may look at things under a totally different prism in the sense that some are in general more optimistic than the others and tend (as mentioned above) to look "at the bright side of life". Consequently this could be an individualistic contribution to the anyway subjectively reported job satisfaction that has to be taken into account.

Psychologists may also argue that even if a worker is unhappy with some aspects of his/her working life, the adaptive nature of human mental function could be "responsible" for alleviating this unhappiness in subsequent periods. In other words, after a year in the job, the employee is well possible to think that things are not as bad as they seemed at first sight. Among these lines is a recent theoretical application of cognitive dissonance to the labour market by Watson et. al. (2005). Considering a standard job search model where workers maximise expected life time utility, these authors explain

why the earnings of workers can be restricted by their labour market perception. However, an econometric estimation of such effects can be difficult since they vary from individual to individual and it is not clear how they could be explicitly taken into account.

An issue of consideration is the fear that a subjectively measured variable (such as job satisfaction) carries "noise". In signal processing or computing, this term is used to describe data without meaning. In terms of subjective variables the skepticism lies on whether answers to questions like "How satisfied are you with your work" or "How satisfied are you with your life" elicit meaningful information. Bertrand and Mullainathan (2001) provide some examples which indicate that the answers in similar questions can be potentially sensitive to the words used or the ordering of the questions. However, they point out that the fact that economists cast doubts on the use of subjectively measured variables "is based on a priori skepticism rather than on evidence". In deed, considerations about "noise" traditionally made economists less keen to rely on subjective variables to a great extent. This is the reason that no much work has been done in this direction. Yet, the scenery is rapidly changing. Following the pioneering work of Freeman (1978) and Hammermesh (1977), many studies have tried to examine how job satisfaction is related to both time-varying and time-constant variables. Some focus explicitly on a specific parameter, e.g. trade union membership (Borjas, 1979, Bender and Sloane, 1998, Bryson et.al. , 2004) or gender (Clark, 1997 , Donohue and Heywood, 2004) while other offer a broader (Clark, 1996) and cross-country (Diaz-Serrano and Vieira, 2005, Souza-Poza and Souza-Poza, 2000) perspective.

As previously, we support the idea that subjectively measured variables enclose valuable information. Oswald (1997) argues that economists should not avoid dealing with data on subjective feelings. One of the reasons is that subjective well-being measures correlate with observable phenomena (i.e., reported job-satisfaction values are not just 'noise'). This view can be particularly plausible if supporting evidence is found for the predicting power of these variables. Freeman's (1978) and Clark's et.al. (1998)

studies are along these premises. Moreover, psychologists (and sociologists to a lesser extent) have been using such data for many years. Quoting Blancflower and Oswald (1999), 'It seems difficult to believe that economists have a more acute understanding of the limitations of well-being statistics than do the thousands of psychologist who use such data in their own research'

Using subjective variables in an econometrics framework is not new. We have already made use of this approach using job satisfaction as control variable while considering the subjective view of employers on whether they are constrained in the hours they work. But the dependent variable (labour market transition), although individually reported it was not reflecting any subjective feeling. In the job satisfaction case, when a respondent is being asked to value the satisfaction he/she derives from the working place the analysis becomes more complicated and the validity of results can be sensitive, especially if this answer is used as dependent variable. Bertrand and Muleinathan (2001) argue that when objective variables are used on the left hand side, measurement problems may bias the regression results. For example, if for a reason rich people (on average) tend to underestimate their financial status[14] then the estimated coefficient will just capture the measurement error and convey no information whatsoever about their actual satisfaction on their financial situation. But measurement errors are well likely to exist even when using "conventional" covariates.

The contribution of this chapter can be synoptically summarised in the following points:

a) We provide a literature overview of considering job satisfaction as an economic variable, indicating the possible dangers of doing so and presenting relevant studies supporting the idea that analyzing job satisfaction can in fact be useful in the discipline of economics.

[14] For example in a hypothetical question "How satisfied are you with your financial situation"

b) We verify previous results on job satisfaction as far as some classic explanatory variables are concerned. For example, women report consistently higher job satisfaction rates than men, (Blanchflower and Oswald, 1999; Clark 1996,1997). However, by using subjectively measured covariates we aim to decompose these previous broad results and tackle heterogeneity in a more consistent way.

c) We examine job satisfaction differences between periods and across individuals in order to isolate the specific effects of employment and individual characteristics on job satisfaction. This task is greatly assisted by the nature of our panel data set

d) We estimate job satisfaction profiles to examine how job satisfaction alters through job tenure, based on whether the employee has changed job or not. Although it is expected that a job change will yield a positive effect on job satisfaction, it is not quite certain (and has not addressed in the literature, at least to the best of our knowledge) if this positive effect will persist or not. Further, we decompose the job satisfaction profile with reference to the whether the employee has experienced a job change within the same employer (a promotion for example) or between employers.

3.2. Job Satisfaction as an economic variable

The issue of job satisfaction has drawn extensive attention from a variety of social science disciplines, especially psychology. Locke (1976) provides an extensive and holistic summary of the psychological literature on this issue and recommends possible ways of specifying a relationship between job satisfaction and other characteristics. Most of the studies discussed by Locke, propose correlations between job satisfaction and a single variable of interest rather than using the more formal statistical methods of multivariate regression analysis favoured by economists. However, the survey reveals, at

least from a qualitative point of view something not quite unexpected vis. the negative relationship between job turnover and job satisfaction.

Far fewer studies in the economics literature have placed this variable into the epicentre of discussion. Freeman (1978) estimated a model to test whether low levels of job satisfaction can predict future quits. The panel nature of his datasets (NLS and PSID) made it possible to relate satisfaction in one year with future mobility. In this context, Freeman used logit regressions to calculate how the probability of quits is affected by job satisfaction. He found that one standard deviation[15] change in the satisfaction variable reduces the probability of quits by almost 40 percent in PSID and 12 percent in the NLS. At the same time, these effects were from a statistical point of view very well established. Freeman's (1978) comment was that "subjective expressions of job satisfaction are significantly related to future overt behaviour, which makes satisfaction at least potentially analytical useful."

Dissatisfaction with a job can be linked to job mobility to the extent that an employee can easily move to a different working place or change job within the same establishment. Leaving job mobility aside, a number of studies have found that worker dissatisfaction can have significant "knock-on" implications for worker behaviours. If a dissatisfied worker is unable to change job for a number of various reasons (for example, high unemployment rates, firm specific training, family considerations), it has been suggested that adverse behaviour such as absenteeism can occur (Vroom, 1964) and mental health problems can arise, Locke (1976). Dissatisfaction with the job could also be associated with lower effort in the working place and shirking, (Weiss 1980; Akerlof and Yellen 1986). It is perhaps not surprising that reduced levels of job satisfaction can have a profound (negative) impact on the employment relationship from many aspects. A satisfied employee would be less willing to voluntarily quit from his job and at the same time a satisfied worker would be keen to invest in firm specific-human capital. Such

[15] The reason for this interpretation is the z-score transformation of the satisfaction variable he used.

action could be perceived as a sign of commitment from the employer's side and may be rewarded[16].

Job satisfaction as an economic variable needs careful treatment, especially if it used within an economic context because individual responses can be subjective to noise. If, for instance, an individual is generally comfortable with his/her working place but something unpleasant (in terms of employment relations, e.g. dispute with the manager) happened in the job exactly the day before he/she got interviewed, it might be argued that his/her response will not be independent of this incidence and that if the employee had been asked the same question a week or so later, the response might be quite different. Pushing this argument further, Taylor (2006) finds that even the day of the week on which a respondent is interviewed plays a significant role in explaining job satisfaction variations. By the same token, if panel data is used, year to year variation in job satisfaction could be due to a self error measurement. (a different year to year reported level of job satisfaction implying the same utility), especially if there is a plethora of possible choices in the questionnaire, e.g. a job satisfaction index ranging from 1 to 10.

So far, mainly due to data unavailability, economists could implicitly approach job satisfaction looking at variables such as wage promotion, employment protection, promotion opportunities and so forth. However there is no reason why we should consider job satisfaction as a monotonic transformation of one of these (and probably other variables). If this was the case an employee with a higher wage should, *ceteris paribus*, have a higher job satisfaction compared to an employee with a lower wage. But two workers with different wages can have the same job satisfaction (keeping the observable parameters constant) if the one with the lower wage has lower expectations towards his wage than the employee with the higher wage.

[16] An interesting perspective linking macroeconomic theory and job satisfaction comes from Hamermesh (2001) who argues that workers with high job satisfaction have a lower incentive to undertake precautionary saving. This idea could be valid in two cases, if high job satisfaction is related to job security and to the extent that job dissatisfaction can stimulate quits.

3.3 Utility and Job Satisfaction

It is reasonable and within the scope of economic rationality to suggest that the utility that an individual derives does include job satisfaction as well as other variables. In this case the utility function can simply take the static form:

$$U_i = \boldsymbol{v_i} + u(w_i, h_i, x_i, s_i, \mathbf{z}_i, e_i) + \varepsilon_i \qquad (1)$$

The first part which includes $\boldsymbol{v_i}$, is a vector which relates non-work aspects of life to overall utility. This vector can include both constant as well as time variant parameters. For example being married can be considered to be unrelated to job satisfaction but is expected to affect life satisfaction. So any link between marital status and job satisfaction is indirect and may work through general life satisfaction. The second part involves all the possible aspects of working life that contribute in a direct manner to job satisfaction. Thus, the utility function can be decomposed into many life-time aspects as well as a variable containing job satisfaction. At the same time job satisfaction can be multi-dimensional, defined by a sub-utility function that could include satisfaction with working hours (h), promotion opportunities (x), monthly payment (w) , employment security (s) plus a vector **z** that contains all the other observable parameters. The last element (e_i) is the individual specific term that includes all the other parameters that are not observed but are expected to differentiate the job satisfaction classification between respondents, even if they share exactly the same observable characteristics that a researcher would explicitly control for in an econometric modelling.

The dependency path between characteristics and job satisfaction can be modelled in many ways, simple or complex. An econometric model of the form of equation (1) can

be simply considered if the researcher assumes strict exogeneity. In other words, the explanatory variables are assumed to affect job satisfaction directly and in the same manner such that job satisfaction is additively contributing to the overall utility. This logic is consistent with an additively separable utility function. A more complex and perhaps more realistic approach would be to allow for an interaction between individual specific observed elements and the determinants of job satisfaction. For example, job stability (determinant) could be highly appreciated by a middle age, married with children employee (characteristics) but might perhaps be of less concern to a young employee.

For this discussion to be complete, two more issues must be presented: First, the error term $\boldsymbol{e_i}$ which appears in the utility function related to job satisfaction. This term depicts all the unobserved factors that might potentially affect job satisfaction but which are not related to the observed parameters. It is equivalent to the tastes shifter factor we encounter in general consumption functions and obviously, in an econometric sense, affects the constant term but not the slope. It potentially depicts issues related to the personality of each respondent and could, in an abstract way, account for the fact that a respondent can generally be more optimistic than the other. Secondly, the error parameter ε_i that appears in the general utility equation must be independent of e_i . If this is not the case, then the same personality characteristics would be taken into account twice, leading to underestimation of the parameters of interest.

3.4 The Relationship between Life Satisfaction and Job Satisfaction

One potentially interesting area of investigation is the influence of overall satisfaction on job satisfaction in the sense that an individual who is happy with his/her life might be able to tolerate in general adverse employment situations. However, such a consideration could prove problematic for mainly two reasons. Data on overall life

satisfaction are usually not available (and if they are, similar issues to those with any subjective variable may arise) and secondly (and most importantly) no one can guarantee that the model will be reserve causality proof. In other words, for some workers job satisfaction can be the *main* determinant of overall happiness.

Using data from the latest addition (wave 14) of the BHPS we examine whether there is a noticeable common path in the reported life overall and job satisfaction. Table 3.1 presents a cross tabulation between these two variables. While it is natural to assume that job satisfaction is part of the overall life satisfaction, for some people these two aspects can be totally unrelated. Indeed, we can identify three respondents who although being completely satisfied with their jobs, are totally unhappy with their lives. Of course, these respondents could be treated as outliers in a sample of 7800 people.

Looking at the relationship between life satisfaction and job satisfaction sheds light to the idea that there might be other aspects (unrelated to job satisfaction) of life that weight heavily in the subjective life satisfaction index and consequently affect job satisfaction. To make this clearer, assume two individuals sharing identical working profiles. If one of these two individuals had a pleasant disruption of a sequence of expected incidences (child born), then there is a high chance that he/she could have reported a higher job satisfaction than the other colleague, influenced by the rise in the total life satisfaction and not directly by the incidence it self. Undoubtedly this argument can work in the opposite direction when, apart from the implicit effect, there is also a direct effect coming from the projection of this incidence on the aspects of the employment, most often the wage and the working hours.

Table (3.1)
Job Satisfaction and Life satisfaction . BHPS, 2004, row data (%)

Job Satisfaction	*Satisfaction with Overall Life*						
	not satis at all	2	3	4	5	6	7
not satis at all	3.41	5.68	14.77	22.73	22.73	22.73	7.95
2	1.41	1.41	15.49	23	35.21	18.31	5.16
3	0.85	4.06	15.6	26.28	31.84	19.87	1.5
not satis/dissatis	0.62	2.89	8.25	20.82	40.21	22.47	4.74
4	0.47	1.8	5.4	17.27	41.4	29.67	4
5	0.17	0.78	3.38	9.92	33.39	43.25	9.12
completely satis	0.23	0.91	1.7	7.84	16.82	38.98	33.52

Coming back to table 3.1, it is not clear whether there is a strong correlation between these two variables, apart from the fact that most responses are distributed around 5 and 6 which denote a good level of life satisfaction. Given that there are few responses at lower levels, it would probably be risky to argue in favour of any causal relationship in the classical linear sense. After mentioning that by using the chi squared test of independence this hypothesis is not rejected, one can observe that very low levels of job satisfaction do not necessarily imply low levels of life satisfaction. But as job satisfaction increases, there is both redistribution of life satisfaction between the higher scales (5,6,7) as well as significant increase in the percentage of those who report the highest life satisfaction. For example, from those employees who report job satisfaction of 1 (the lowest) in 2004, 53.41% have a life satisfaction of 5, 6 or 7. But for the same year, reporting the highest job satisfaction (7) is associated with a massive 89% of good life satisfaction (5,6 or 7). These figures show that there is a positive relationship between job satisfaction and life satisfaction with an estimated correlation coefficient of 0.330, significant at even 1%. As mentioned above, the exact direction of the dependence between these two variables can not be made clear by this simple tabulation. One could

argue that the shape of relationship depends on the level of job satisfaction. For example moving from 6 to 7 in the JS index results in an important increase for those who report the highest life satisfaction, from 9,57 to 32,95 %. In other words, the pattern of dependence becomes more clear and strong at the highest level of job satisfaction.

In any case, the high degree of heterogeneity between individuals and the fact that table 3.1 provides unconditional cross tabulations makes us sceptical about using life satisfaction as a control variable in a JS equation. If we had a priori knowledge that some individuals consider life satisfaction as being independent of job satisfaction, we could use life satisfaction data in order to isolate any unobserved effects on job satisfaction coming from the thought that general life happiness can make someone feel happier with his work, keeping all the other parameters constant. Frijters et al (2004), using the German Socioeconomic Panel (GSOEP) find that major life changes (for example birth of a child, becoming divorced, death of a family member and so forth) have a significant impact on subsequent life satisfaction levels. Consequently, life satisfaction (LS) could potentially (as long as the non reserve causality criterion is met) serve as a proxy for time varying observed and unobserved heterogeneity. One might question why LS has to account for both, observed and unobserved factors since observed parameters can enter the econometric specification directly. The answer is that subjective variables (like LS) that act as proxies for life events can be much more useful in terms of the economic analysis since they encapsulate the relative importance that each person attributes to life events which is difficult to be revealed otherwise. The rest of heterogeneity can be dealt with either random or fixed effects, depending on the assumptions that the researcher makes. In what follows, we will not consider life satisfaction as an explanatory variable in order to avoid any simultaneity problems.

3.5 Job satisfaction and employment -individual characteristics

3.5.1 Gender differences in job satisfaction

An important scope of our analysis is to examine if job satisfaction varies significantly across different demographic groups, males and females, young and old. Using the BHPS, Clark (1997) provides a comparative study on job satisfaction between men and women. His evidence suggests that women report significantly higher job satisfaction than men. However, this study is static and restricted to the first BHPS wave so, important information on how job satisfaction varies across time and between women and men is not revealed. The dynamic element is important and directly related to the explanation that Clark gives for this paradox: Women usually enter the labour market having, in general, lower expectations than men. These expectations may not necessarily refer only to wages but are unavoidably extended to other aspects of working life. Consequently, the pleasant and unexpected gap between the expected and realised working condition is the source for the statistically different levels of job satisfaction reported by women.

If this argument holds, one might expect expectations to move along a social adjustment path. Female labour supply rose significantly during the last decades[17], corresponding to a structural social change characterised by equality in the educational opportunities (at least in the UK) and increased participation in all aspects of economical and political life. Although there is evidence that discrimination does exist, especially when it comes to wages and promotion opportunities[18], the general feeling is that the working place for women is much better than it used to be some years ago. Taking this assumption as the starting point, we should observe differences in the reported satisfaction by comparing two periods on a time scale of 13 years. To be more specific,

[17] Blundell and McCardy (1999) provide evidence on the rise in the volume of labour women supply during the last decades.
[18] Jones and Makepeace (1996) argue that women and men on the same managerial level do not have significant wage differences. It is rather the difficulty of women to reach these levels that define the terms of discrimination

we consider the first (1991) and the latest (2004) wave of the BHPS to see whether the job satisfaction gap between men and women has narrowed. The following table summarises the evidence:

Table 3.2

Job Satisfaction by gender. BHPS, 1991- 2004, Column data

	1991			2004		
	Males	Females	Total	Males	Females	Total
not satisfied	39.3%	29.1%	34.4%	10.9%	10.2%	10.6%
2	2.0%	1.5%	1.7%	2.7%	2.9%	2.8%
3	5.7%	3.3%	4.6%	7.8%	6.4%	7.1%
neither sat/nor dis	14.4%	10.5%	12.5%	8.9%	5.4%	7.2%
5	21.1%	16.8%	19.0%	23.4%	18.5%	20.9%
6	27.6%	25.9%	26.8%	46.6%	51.9%	49.3%
complete satisf.	25.2%	39.1%	31.9%	9.6%	13.8%	11.7%

* The sample has been weighted using the BHPS provided cross-sectional weights.
* Chi2 test for independence between genders is significant at the conventional 5% level.

Comparing job satisfaction in the early 90's with job satisfaction in the mid 00's there seems to be a very significant decline in the percentage of those who declare totally satisfied with their work. Both genders are simultaneously affected by this evolution, men's satisfaction at the highest level dropped by 15,6% while for women the equivalent difference was 25.3%. At the same time, there is a noticeable decrease in the reported total dissatisfaction with work, again for males and females. Although the total figures for both genders haven't changed significantly if we jointly consider the categories 6 and 7 (complete satisfaction), the distribution has in fact changed for those who report lower job satisfaction. The difference in the reported satisfaction is still here but is it not of the same magnitude as before. Women on average still report higher job satisfaction than men. However, the majority of the responses have moved from the 7^{th} scale to the 6^{th} one

which is undoubtedly much more preferable than having a substantial percentage of totally dissatisfied workers.

In the literature, these differences were explained in terms of self-selectivity into the labour market and, as mentioned above, expectations differences between the genders, since controlling for relevant variable still leaves the female variable with a positive coefficient, Clark (1997). Our argument is that social adjustment from one side (increased levels of female labour supply) and improvement of working conditions on the other would have made the magnitude of these impacts modest in relation to earlier years. And the under reference period has been quite acknowledged (at least for the UK) (Treasury, 2002) for the deregulation of economic activity which is relevant for our analysis when it comes to the labour market. If this approach is correct the gender element that has remained in the job satisfaction consideration is more likely to be attributed to the actual psychological characteristics of women. Interestingly, this element disappears when we consider young women, higher educated workers, workers in managerial positions and workers at male-dominated environments as Clark (1997) and Souza-Poza and Souza-Posa (2003) report.

3.5.2 Union Membership effects in job satisfaction

The impact of unions in economic life has been discussed excessively in both empirical and theoretical aspects[19]. Most studies have focused on the pecuniary aspects of the decision to actively involve in a union body. In this point it must be mentioned that the general framework normally applies to every worker, regardless of whether this worker belongs or not to a trade union. For example in France[20] union density accounts only for a 10%, but the coverage extends to the impressing 95% by law. It is true that negotiations that take place at a high decentralized level are expected to cover a large

[19] See A. Booth (1995). "The economics of the Trade Union". Cambridge University Press
[20] Information derived from Table (2) in Nickell et.al. (2005).

percentage of the working population. These negotiations deal with a very generic framework of workplace aspects like minimum wages, insurance issues and so forth. However, issues that are specifically related to each firm's characteristics can only be discussed collectively within the firm through a workplace union. By joining a trade union, a member can express dissatisfaction with pecuniary or non-pecuniary aspects of the job. Thus a dissatisfied worker instead of quitting, remains in the job, joins the union and expresses his/her complaints through various voice mechanisms provided by their union (exit-voice).

An early contribution to the relationship between job satisfaction and union membership is accredited to Borjas (1979). Using a sample from the Natural Longitudinal Survey of Mature Men he finds out that union members report on average lower job satisfaction. Moreover, dissatisfaction (within union members) increases as seniority rises. This fact is indeed puzzling. Someone would expect that seniority should have a diminishing effect on job dissatisfaction since job separations are most likely to occur at the early stages of the employment relationship. So, if someone is not happy with the *a priori* non-observable characteristics of a job he/she could quit in order to search for a better matching. To our view, these results can be related to the effectiveness of the workplace union. By joining such a union, the employee might have augmented expectations regarding the possibilities of differentiating his/her employment terms in both a pecuniary and non pecuniary manner. If these expectations are not realised then the same dissatisfaction that led to membership at first place is coming back to surface. Consequently, a proper examination of the effect of unionism on job satisfaction shouldn't be simply of cross-sectional nature for the simple reason that the dynamic characteristics of this involvement are neglected. As a final remark on this, Bender and Sloane (1998) also emphasize the importance of controlling for satisfaction with the union in order to isolate job satisfaction. Freeman (1976) offers an explanation on why the nion coefficient in a job satisfaction equation is likely to be non-zero. Since the initial scope of unionism is to provide mechanisms for workers' voice to be heard effectively,

reported dissatisfaction "is not genuine in the sense that it leads to quits, but instead a device through which the union can tell the firm that its workers are unhappy and are demanding more" , Borjas (1979:25). As with women, the union variable can be a choice variable, especially in jobs where unpleasant conditions are *de facto* present. Bryson et.al. (2004) consider the 1998 sample of the British Workplace Employee Relations Survey. At first, they find a significant negative (-0.135) coefficient for the union variable. But when they account for potential endogeneity in the model, the element that allows the correlation of unobserved factors between satisfaction and membership equation absorbs almost all of the impact (-0.124). In other words there are reasons to believe that the correlation of omitted variables (which cause dissatisfaction) with the dummy variable that indicates whether someone is a union member or not, results in this coefficient being significantly negative. In this case, it is the reported low job satisfaction that stimulates union membership rather that a causal (positive) impact of membership on job satisfaction.

The above analysis had explicitly assumed that the unions' contribution into a worker's well being refers to the non-monetary features of job, since the pecuniary aspects are more or less known, before the contractual relationship. In fact, what this negative sign expresses is an expectation parameter that things in the workplace will be improved. In this sense, when estimating a job satisfaction equation, a union parameter could be avoided, provided that a large numbers of controls have been used so that even if a union variable had been there, its impact would have been insignificant. Of course, this would require adjustments not only for individual heterogeneity but also for heterogeneity in the working place. The latter would be possible only in studies that match employers' characteristics with employees attributes. In the BHPS such discretion is not available, however there are other ways to approximate workplace conditions like dummies for the industry category, public sector or private sector, size of firm e.t.c.

3.5.3 The age factor

One strong consensus which results from the seminal job satisfaction study by Clark (1997) is that a U-shaped relationship between age and job satisfaction exists. It is now well expected in most empirical studies (not necessarily related to labor markets) to see the age factor entering the list of explanatory variables in a quadratic form. If this hypothesis holds, job satisfaction although higher for young employees, diminishes with age until it reaches a minimum point from which it start ascending again. The above mentioned studies though fail to differentiate between a pure age effect and a tenure effect. Since these two aspects are expected to be correlated, some of the tenure features are wrongly attributed to age. High tenure can have both negative and positive effects for some employers and this could be confusing when age becomes the parameter of interest. The age variation in job satisfaction can be related to the process of changing jobs (either between employers or within employers). In this manner, those who manage to switch jobs must be expected to have increased job satisfaction in comparison to the satisfaction they were reporting before changing job. Since changing jobs is more often observed in young ages (and low tenures), being an employee above a certain age and a certain tenure implies on average higher job satisfaction. If this was not the case, the employee would had already changed job at earlier stages of his/her working (and physical life) when family constraints (and probably other constraints) wouldn't be in place. This discussion also highlights the term flexibility as it was defined in the previous chapter, namely the ability to change jobs as a way to move closer to the desired working place characteristics. With the difference now that not only the two broad aspects of labor supply are taken into consideration (working hours, wage) but issues such as job security, the work it self, individual heterogeneity and so forth.

3.6 Predicting subsequent transitions

The relative power of job satisfaction to determine future labor market movements have been merely assessed. Although Freeman (1978) was among the first economists to examine this issue, it was only after two decades that relevant research evolved, primarily thanks to the availability of suitable datasets and the improvement of computational techniques. A reader who is unfamiliar with the relevant literature is likely to ask about the need of considering an intermediate subjective variable since one could just examine the impact of seemingly more relevant variables such as wages or promotion opportunities. As far as wages are concerned, we mentioned earlier that previous efforts in the literature to consider the actual wage as a determinant of job satisfaction were unsuccessful. Promotion Opportunities on the other hand can be a good sign of a more stable relationship in the sense that expectations for a better employment future could be a discouraging parameter for job quits, even of current working conditions are non the desirable ones. Clark, Yeorgellis and Safney (1998) argue that job satisfaction can be a suitable proxy for the non-pecuniary aspects of a job that cannot be measured. In fact, the monetary attributes of a job such as the wage, the overtime premium, the insurance contributions etc are normally known before the contractual working relationship takes place. Even some trivial non-pecuniary issues are known in the labor market since each firm usually carries a good or bad reputation, for example in terms of the promotion opportunities it offers, the possibilities for in-the-job training ethical rewards, overtime (paid or non paid) employment and so forth. However, the exact nature of this dimension is unknown ex-ante and most importantly we also do not know the projection of each worker's personality on these non-pecuniary issues. For example, the relationship with the co-workers is an important parameter of the working environment and every single worker wishes to get along with people surrounding him/her. Unfortunately this is not always feasible due to the incompatibility of personal characteristics.

Akerlof et al (1988) using the National Longitudinal Survey report that, at least for the United States, switching jobs (without an intermediate unemployment spell) is not usually accompanied by a significant upwards wage change. On the contrary, many workers report no change while some others mention even wage cuts. More interestingly, the latter despite the fact that they suffer wage cuts they achieve gains in overall job satisfaction. In this sense, job satisfaction can act as a proxy for all those elements that cannot be considered directly but play a significant role in decisions related to the future labor market status. Non-Pecuniary aspects of work can also be intra-related, for example promotion opportunities might be expected to depend on the signals that the employers receive from their workers in the form of voluntarily over-working. The non-pecuniary rewards can be either time-varying, following a cycle, or time constant. Unquestionably, this distinction can be unique for each worker. Finally, linking an individual's a priori evaluation to their subsequent behavior serves to validate the interpersonal comparison of such subjective measures in cross sectional data. If panel data is available, more information can be used and the unobserved aspect of the individualistic heterogeneity can been captured.

As mentioned above, Freeman (1978) provided the novelty for the relationship between satisfaction in the working place and quits. However, in the analytical framework he provided, he used job satisfaction as a continuous variable which differentiates his work from subsequent efforts. For instance, Clark et. Al. (1998) evaluated an ordinal version of job satisfaction, although the meaning of the results did not change significantly. And in any case, behind any ordinal subjective reported measure of job satisfaction there is a unique latent realization for each employee. Of course, being dissatisfied in general doesn't imply an instantaneous movement either within the labor force (change employer or being promoted within the same employer) or out of it. A wide list of constraints makes such a decision a complex one. Having children for example or repaying a loan carries a great need for a stable flow of cash. Working security in this case weights more heavily than working hours or promotion opportunities. However, if

there were no costs related to searching for a job and moving to a new one, it should be expected that workers would move continuously up to the point where their job satisfaction would reach the maximum level.

3.7. Data Set and Descriptive Statistics

We use the first fourteen waves of the British Household Panel Survey, so the period between 1991 and 2004 is taken into consideration. The sample consists of all individuals above 18 who are in the labor force (either employed or unemployed) but excludes the self-employed since the determinants of job satisfaction can be different for them. An individual must have at least been questioned for two consecutive periods. This restriction is imposed by the panel data structure of the job satisfaction model in order to capture the heterogeneous elements. Also, the nature of some independent variables (for example, job change) requires this restriction.

Table 3.3 provides a summary along with the basic statistical properties of some key variables that can potentially be related to job satisfaction. The purpose of this categorization is to give a first descriptive taste of how job satisfaction is distributed across the population, given some observable characteristics. All the usual suspects are there, from sex and gender to education and workplace size. Note here that only the latest wave has been taken into consideration.

Job satisfaction is, as expected and discussed earlier, in higher levels for women than for men and this difference is statistically significant at the conventional 5% level. Women on average have a satisfaction of 5.52 (in the 1 to 7 scale) while men a job satisfaction of 5.29. In terms of age, differences are marginal for the first three categories, namely the employees below the age of 56. For the latter, job satisfaction boosts to an impressive 5.63 which is the highest job satisfaction level we encounter in this analysis.

An issue of selectivity is again (as for women) the primary suspect for this significant (even at the 1% level) difference. Senior employees could decide to stay in the job only if the feel very happy about it. And this happiness which is reflected in the satisfaction levels can be decomposed between an observable factors effect and an unobservable factors effect. In the former case, a senior employee remains in the labor force simply because the terms of his/her labor supply is much better than average. But an employee could still be willing to remain active even if the workplace characteristics do not differ from those of an average younger employee. In this case, the job itself becomes a source of pleasure and is probably not associated with payment, promotion or other considerations. In other words, the feeling of being productive and socially useful at this age could overwhelm any other job parameters.

When the discussion comes to working hours descriptive statistics show that those who work more hours than they desire (over-employed) report on average less job satisfaction (5.08) than employees who consider themselves unconstrained (5.59). This difference shows the importance of this aspect of labor supply in job satisfaction. Underemployed employees (i.e. those who work less than they desire) are located in the middle, reporting an average job satisfaction of 5.29.

In relation to the rest of parameters in table 3.3, there is statistical difference as to whether the employee is white or non white. Married people report on average higher job satisfaction than the single ones but this could be attributed to life satisfaction. Having children on the other hand does not influence job satisfaction differentials. Finally, firm size gives a significant F value, with the highest level of job satisfaction located in the firms that employ less than 10 workers.

3.8. Analytical framework and estimation considerations

In order to identify the determinants of job satisfaction in Britain we use an ordered probit framework. This model has been used in the majority of all previously mentioned studies. An alternative approach which is not popular among the economists (but has been used widely by psychologists) would involve a treatment of job satisfaction as a cardinal variable. Cardinality implies that the difference between a 3 and 4 in job satisfaction for a person would be the same as between a 6 and a 7 for a different person. On the other hand, using ordinal measures of job satisfaction is equivalent to assume that it is unknown what the relative difference between satisfaction answers is but individuals at least share a roughly common interpretation of each possible answer. In principle, the true satisfaction level between two respondents can be different, even if both of them report the same ordered satisfaction score. The assumption of ordinality is supported by psychological findings. Diener and Lucas (1999) find that in experiments where participants were shown pictures of other individuals, they could identify whether the individual shown to them was happy, jealous, etc. Also in a study by Van Praag (1991) which is mentioned in Carbonell and Frijters (2004), participants translated verbal variables (good, very good) into roughly the same numerical values.

One attractive feature of panel data is that individual heterogeneity can be accounted and controlled for. The term heterogeneity simply means that there are unobserved individual elements that are correlated with the observed parameters and thus educe biased estimations for the parameters of interest. But even if the unobserved components are not correlated with the covariates, using panel data would result in correlated errors, especially if the individual specific heterogeneous error is time constant. Following Carbonell and Frijters (2004) we present the different assumptions about the unobserved parameter (heterogeneity) as well as the relationship between the unobservable and the observable parameter:

1) Time-varying unobserved factors are related to observables in an unknown way. This assumption is highly realistic but inference is of course impossible since we don't know the exact nature of dependence. An example for this could be the way people form their expectations and the impact that this has on observable parameters

2) Unobserved factors that do not vary over time are influencing the initial levels (and not the changes) of observed factors.

3) Unobserved factors that do not vary over time are uncorrelated with the observable characteristics.

The last two assumptions are mentioned in the panel data literature as fixed effects and random effects respectively. Estimators based on panel data sets are quite often more accurate than from other sources since individual heterogeneity can be taken into account. By the term heterogeneity, economists usual refer to person specific aspects that are not explicitly measurable. In the satisfaction case (either job or life satisfaction) any answer that lie on personal judgments must be considered with caution since it can be influenced by variant and time-invariant elements. Ideally, someone would prefer to use a fixed effects approach combined with an ordered probit or logit specification. The justification for doing so lies on the suspicion that observed and unobserved elements might be correlated. However, all job satisfaction panel studies use random effects, mainly due to the unavailability (until recently) of an efficient ordered probit fixed-effects estimator. Some authors (Winkelmann and Winkelmann, 1998) have adopted the approach of transforming the ordinal variable into a binary one, that takes the value of one above (or under) a specific threshold which is arbitrarily chosen. It is apparent that in this case the fixed effects estimation can be conducted without any computational problems but precision is lost. The reason is that only people who can move across the specific threshold are taken into consideration. Alternatively, adding subject dummies to

a standard ordered probit model would yield inconsistent estimations, unless there is a large number of observations within each group, Greene (2004).

A breakthrough in the job satisfaction literature (or in any panel studies with a categorical dependent variable) has emerged due to Carbonell and Frijters (2004). These authors propose a fixed effects estimator which consists of a simple alteration of the standard Chamberlain's (1980) fixed effects approach. Of course, the usual drawback is that time-constant parameters (for example sex and age) are dropped out and can not be estimated.

3.8.1 Random Effects Ordered Probit

The random effects model imposes the (strong for some authors) restriction of orthogonality between the observed and unobserved features of the determinants of job satisfaction. Job satisfaction is modeled as:

$$JS_{it}^{*} = \beta' \mathrm{X}_{it} + \varepsilon_{it} \quad \text{i=1,….,N;} \quad \text{t=1,…..,T} \qquad (2)$$

Where JS_{it}^{*} is the latent outcome, X_{it} the determinants of Job Satisfaction and ε_{it} the composite error. This approach is described by Butler and Moffitt (1982). Their specification involves a composite error term that consists of $\varepsilon_{it} = u_{it} + \nu_i$ where u_{it} is normally distributed with mean zero and is independent across all periods and all individuals. The other term, ν_i , captures individual heterogeneity and is assumed to be constant across all the periods for the same person. Additionally, it is independent across individuals and uncorrelated with all the explanatory variables $\mathbf{X}_{it}$, in all periods. The variance of the composite error is $\sigma_u{}^2 + \sigma_v{}^2 = 1 + \sigma_v{}^2$ with $\rho_u = \dfrac{\sigma_v^2}{(\sigma_u^2 + \sigma_v^2)}$. In other words, ρ depicts the proportion of the total error variation that can be explained by the individual random effect[21].

[21] We adopt the normalization $\sigma_u{}^2 = 1$ so that ρ is estimated directly.

In the question "How satisfied in general are you with your Job "the ordinal response S given by individuals is assumed to be dependent on the unobservable cardinal level of job satisfaction each individual has in mind. More specifically, depending on the individualistic thresholds, the probability that someone will report a job satisfaction in the range 1-7 is given by :

$$P(JS_{it}) = \begin{Bmatrix} 1 = P(JS_{it}^{*} \le c_1) = P(\varepsilon_{it} \le c_1 - \beta' \mathrm{X}_{it}) = F(c_1 - \beta' \mathrm{X}_{it}) \\ J = P(c_{j-1} \le \varepsilon_{it} \le c_j) = F(c_j - \beta' \mathrm{X}_{it}) - F(c_{j-1} - \beta' \mathrm{X}_{it}) \\ 7 = 1 - F(c_6 - \beta' \mathrm{X}_{it}) \end{Bmatrix}$$

For J=2,3,4,5,6 while F denotes the cumulative density function of the normal distribution.

The maximum likelihood estimates of the parameters in (2) are obtained by maximizing the log likelihood function with respect to the unknown elements and the covariance matrix. Generalizing from Buttler and Moffit (1982) by setting $a_{it} = c_{j-1} - \beta' \mathrm{X}_{it}$ and $b_{it} = c_j - \beta' \mathrm{X}_{it}$, the likelihood function can be written as:

$$\begin{aligned} P(JS_{i1}, ...JS_{iT}) &= \int_{a_{i1}}^{b_{i1}} ..... \int_{a_{iT}}^{b_{iT}} f(\varepsilon_{i1} .... \varepsilon_{iT}) d\varepsilon_{iT} ..... d\varepsilon_{i1} \\ &= \int_{a_{i1}}^{b_{i1}} ..... \int_{aiT}^{biT} \int_{-\infty}^{\infty} f(u_{i1} | v_i) f(v_i) dv_i du_{iT} ..... du_{i1} \\ &= \int_{-\infty}^{\infty} f(v_i) \prod_{t=1}^{T} [F(b_{it} | v_i) - F(a_{it} | v_i) dv_i \end{aligned}$$

Where *f* is the density function of the normal distribution and F denotes the equivalent CDF. Since in our case T>2 an approximation must be used, in particular this is dealt with the Gauss-Hermite quadrature.[22]

[22] Description of the Gauss-Hermite quadrature procedure far exceeds the scopes of this analysis, see Liu and Pierce (1994) "A note on Gauss-Hermite quadrature" for an excellent example on a binomial logit model where the explanatory variable is measured with error.

3.8.2 Fixed Effects Ordered Logit

Ferrer-i-Carbonell and Frijters (2004) suggested a deviation from the likelihood function which is used to estimate the standard binary fixed effects logit model proposed by Chamberlain (1980)[23].The idea is to introduce both individual fixed effects a_i and individual cut-off points. These authors showed that in this sense the fixed effects ordered logit can be reformulated as a fixed binomial logit with the fixed effects and the individual specific thresholds removed from the likelihood specification.

3.8.3 A cardinal approximation of ordinal categories

Using an ordered probit specification for the alternative ordinal job satisfaction categories is a method to impose cardinality in an abstract manner. The JS_{it}^{*} index that we mentioned above is latent in the sense that it is not observable. What we actually observe is the seven response categories corresponding to different levels of JS_{it}^{*} and this satisfaction index must lie within a specific region, (c_{i-1} , c_i). For example, for an individual with a JS index of 6, the actual job satisfaction must lie within the region (c_5, $c_{6)}$. Note that the bounds are arbitrarily chosen since are based on arbitrary assumptions, namely the normality of the error term and the structural form of the model.

Obviously, if the categories them selves were to be examined , a regression of each of these categories against the set of covariates (without considering the latent mapping) would imply nothing less but a generalization of the linear probability model with all the inconvenient statistical properties that follow. For exactly the same reason it would be unattractive to have an ordinal variable as an explanatory one since we would ideally like to have the variable explained on the whole range of the real axis. For this reason Terza (1987) and Van Praag and Ferrer -i- Carbonell (2004) proposed the idea is to transform the ordinal variable on the basis of the conditional expectation. The variable

[23] Chamberlain's (1980) estimator is a conditional likelihood estimator which conditions the probability of observing the job satisfaction level on their sum. By doing this, the individual specific effect is removed from the likelihood function.

is thus transformed into a continuous one by using an assumption about its distribution, usually the normal. More formally, if we denote the transformed variable as $\overline{JS}$, the conditional expectation of the i[th] interval is given[24] as

$$\overline{JS}_i = E(JS \mid c_{i-1} < JS < c_1) = \frac{n(c_{i-1}) - n(c\ )}{N(c_1) - N(c_{i-1})}$$

Where n is the density of the normal distribution and N is the respective cumulative one. The cut off points can be estimated as maximum likelihood estimates out of the percentage of the sample observed in each category. For example if hypothetically 20% of the people in the sample are in category 1 then the c is calculated by solving $N^{-1}(c_1)=0.20$. If the second category adds 5% more then the second cut off point is calculated by $N^{-1}(c_2)=0.25$. Obviously, there is a problem with the last cut off point since the corresponding cumulative probability adds to 1 and consequently the inverse of the cdf cannot be defined. An option to bypass this issue is to use half the frequency of this category.

Consequently, using this method, one can obtain seven transformed values, each of which corresponds to one of the original satisfaction levels. Then, each individual can be assigned with one of the transformed values depending on the original value he/she had. In what follows, we will not consider this approach[25] since we are primarily interested in the statistical significance of the subjective covariates, the direction of their impact on the overall job satisfaction as well as their 'ability' to account for observed and unobserved aspects of working life. Since these are not affected by the above mentioned transformation we present this method for the completeness of our presentation.

[24] For a full derivation see Terza (1987), appendix 1. A comprehensive discussion can also be found in Van Praag and Ferrer-i-Carbonell (2004).
[25] We are grateful to Dr Naga for useful discussions and suggestions on this issue.

3.9. Empirical Strategy and Job Satisfaction Results

3.9.1 Subjective Covariates for the job satisfaction sub-categories

The vast majority of the job satisfaction literature use non categorical independent variables in attempt to determine the explanatory parameters of job satisfaction. In this chapter we deviate from the norm and we move one step further by also considering ordinal subjective variables on the right hand side of the job satisfaction equation. This approach has been used in the past by Sousa- Poza and Sousa Posa (2000)[26], Van Praag et. al. (2003), Ahn and Garcia (2004) and Van Praag and Ferrer-i-Carbonell (2004) but with different data sets.

In particular, we use subjective information about the employees' feelings concerning various aspects of their employment. In this sense we use three variables that capture the satisfaction with the payment, security and the work it self. Initially in the BHPS there were seven distinct sub-categories of job satisfaction. Apart from the three mentioned questions, respondents were also asked to evaluate their satisfaction with their manager, the ability to use their own initiative and the promotion opportunities. These three questions were discontinued after the seventh wave (1997).

Each survey participant is asked in the following manner:

'*I'm going to read out a list of various aspects of jobs, and after each one I'd like you to tell me from this card which number best describes how satisfied or dissatisfied you are with that particular aspect of your own present job'*

[26] In their specification the subjective covariates are used as dummy variables.

Consequently, respondents give an answer on a 1 to 7 scale with (1) denoting complete dissatisfaction and (7) complete satisfaction. A reply of (4) would mean that the employee is neither satisfied nor dissatisfied with the particular aspect of his/her job. The question about the overall job satisfaction then follows:

> *'All things considered, how satisfied or dissatisfied are you with your present job overall using the same 1 - 7 scale?'*

It is apparent that this particular ordering of questions is deliberately chosen so that the final question about the overall satisfaction with job would be considered conditionally on the previous responses about the satisfaction with the sub-domains. These sub-domains are by definition distinct in nature and are expected to have a separate effect on the overall job satisfaction. Van Praag et al (2003) using the German Socio-Economic Panel (GSOEP) verify the strong and positive contribution of a variety of life satisfaction parameters to the overall life satisfaction. To be more specific, they examine the relative impact of job, financial, house, health, leisure and environment satisfaction. This particular analysis of life satisfaction can raise criticism since some of the above mention sub-domains are likely to be correlated and not entering the specification in a strictly exogenous and separable manner. For example, financial satisfaction can be related to job satisfaction, to the extent that the remuneration from paid employment comprises a significant part of the total wealth. In the same token, health satisfaction can affect leisure satisfaction and environment satisfaction can be potentially linked to house satisfaction, health satisfaction or even leisure satisfaction. If this is the case, the estimated parameters will not provide an accurate view of the separate and distinct contribution of each of these variables to the overall life satisfaction.

In the context of our analysis, the sub-domains of job satisfaction can be considered to be separable. For example, satisfaction with job security can not be explicitly linked to satisfaction with security and working hours. Of course there can

always be a potential relationship between working hours and job security if an employee, by working more hours wants to give a signal to the employer about his devotion and reduce the probability of a lay off. The translation of this scenario into satisfaction indexes can not always be clear and will differ across employees. In any case, we treat the subjective explanatory variables as self-contained and we assume that they are nested in a distinct and separable way within the overall job satisfaction.

3.9.2 The advantage of using qualitative and subjective covariates

By using this subjective break down of job satisfaction, the coefficients on other explanatory variables become much more precise for the reason that they act directly on job satisfaction and do not represent the impact of any other non observable parameters.

An additional advantage is that subjective covariates can be used as a method to account for heterogeneity between employees apart from the usual panel data techniques. The majority of studies that examine job satisfaction (or life satisfaction), acknowledge that just the levels of some variables are not enough to explain variations in satisfaction. Instead, it is argued that some of the explanatory variables should be considered in condition to some reference basis, although this reference basis has to be chosen arbitrarily.

A paradigm of such reference basis is the reference income. When examining the impact of wage on job satisfaction, Clark and Oswald, 1998 and Hamermesh, 2001 (among the others) argue that part of the overall satisfaction variation is not accounted for, since employees compare their earnings with the earnings of a group that they consider relevant to them. For some workers this group can be their family, friends, work colleagues etc.

It does not come to a surprise then that the study by Clark and Oswald (1996) found that the actual wage is particularly weak as a determinant of job satisfaction. In an attempt to take into consideration the impact of the relevant wage in job satisfaction, they estimated a standard Mincer type wage equation and derived the predicted wage for each of the individuals in the sample. The ratio of the predicted wage to actual wage was then included in the job satisfaction equation in a log form as an additional covariate. Estimation results verified the importance of using the comparison income as an additional variable since it acquired a negative and significant coefficient. In addition the magnitude of the income variable was raised significantly. Although our approach is concentrated on assessing the usefulness of subjective covariates, for the shake of comparison we also estimate a satisfaction with work equation as described above.

Even if a researcher uses the reference wage as a control variable, there is still a considerable amount of information that is not taken into consideration. For example, the reference wage does not reveal anything about the worker's expectations towards the wage promotions. Although the wage offered to an employee could generally be controlled (and many times imposed by collective agreements) by the contractual relationship at the time of hiring, the exact nature of promotion dynamics are not always expected to be a priori known to the employee. Consequently, no matter how high her initial wage was, an employee might become dissatisfied if she doesn't get the wage promotion she believes that corresponds to her effort. In addition, if the distribution of wage promotions within the firm is rather unequal (i.e. some employees doing similar job or giving the same effort are paid differently) then the dissatisfaction with this aspect of job becomes stronger. Of course such detailed payroll data are not available and even if they were, it would be impossible to identify a case similar to one mentioned above.

By using subjective data on the subjective satisfaction with the payment, a very large proportion of this heterogeneity is taken into account since the response is

subjective and thus relative and probably based on personal comparisons. By using this methodology there are also two advantages:

1) There is no reason to rely on individual payroll data which can sometimes become ambiguous (difficult to separate net payment from gross payment and other contributions).

2) Secondly ,and probably most importantly, this methodology becomes essential if we assume that each employee has a unique expectation about his wage which is defined as the present discounted value of the worker's current and expected future salary over the expected working life. In this sense, a change in wage capable to stimulate increase in job satisfaction must refer to deviations in a worker's pay from its expected path. For example, if an employee is hired in a firm where the usual wage rise is 10% per year of tenure but for a single year the board decides that wage promotions should not exceed a 5%, then although there is a numerical increase in the wage, from an employee perspective this could be considered as a wage cut.

3.9.3 Estimation results

Table 3.6 presents job satisfaction results under three specifications. All estimated versions are consistent with a random effects (RE) ordered probit approach, as presented above. Although someone could allow for different slopes between individuals[27], we do not adopt such a strategy due to the small average number of waves for each respondent and the difficulty in the interpretation of the results.

[27] Boes (2006) offers a generalised random effects ordered probit code in STATA that allows the slopes to vary between groups.

As already mentioned, the distinguishing feature of this study is the use of subjective measures as explanatory variables[28]. Apart from all the variables that usually enter the right hand side of the job satisfaction equation, we consider: In specification (1), subjective data on satisfaction with payment. In Specification (2), apart from the satisfaction with payment there is also a variable that measures satisfaction with job security. Finally, column, (3), includes satisfaction with the work it self. We do not consider the questions concerning the satisfaction with four other sub domains. For the three of them (own initiative, promotion opportunities and relations with the manager) information is not available after 1997[29]. As far as the satisfaction with the working time is concerned, we use instead two dummy variables which indicate whether the employee thinks he is over-employed or under-employed, relative to be unconstrained.

Our results show that the variable related to the satisfaction with the work it self gets the higher significance and magnitude compared to all the other subjective measures[30]. This should not come to a surprise since satisfaction with the work it self may capture a variety of correlations between unobserved parameters and overall job satisfaction. To give an example, an employee working in a public sector job may be doing so for reasons related to the ethical or moral side of the job. In this respect, what matters most to this employee is the feeling of being devoted to a scope that is considered to be idealistic. Consequently the reward that such employees receive could be better described in terms of the public recognition that he/she enjoys rather than in terms of any monetary benefits. Of course, even in the private sector where firms' interests are not necessarily associated with a common social scope, being happy with the actual nature of the job is very important, as the results indicate.

[28] For reasons of consistency we also estimate a random effects regression without subjective variables (table 3.5). The results indicate that compared to the "subjective" specifications, the coefficients for most of the relevant variables are higher in magnitude.
[29] Running an additional regression for the time perion 1991-1997 including these variables showed that at least one of the missing subjective variables can be replaced by the dummy that indicates the promotion opportunities since this dummy became insignificant after the inclusion of the ordinal variable.
[30] Similar results supporting the importance of the satisfaction with the work it self can be found in Nicoletti (2006) and Souza Poza and Souza Poza (2000).

Control variables have been selected in such a way that the most important parameters related to the workplace characteristics can be taken into account. Akerlof et all (1998) also mention the importance of the non-pecuniary aspects of a job in determining job satisfaction. In this sense, all specifications include variables that account for: the firm size (size), promotion opportunities (jobopps), travel time to the job (travel1-travel4), participation in a bonus or a profit sharing scheme (bonus) and whether the employee is a member of a union or not (union). In relation to other more broad characteristics, we account for age, age squared, sex, house tenure, education, marital status and job status of spouse, part time job and whether the employee has recently changed job, either within or between employers. Finally, regional, year and occupational dummies are present as usual.

In specification (1) we exploit only subjective information about the payment and whether the employee feels constrained in relation to the hours he/she works. The ordered probit results show that satisfaction with payment affects overall job satisfaction positively, highly and significantly. Moreover, being constrained in the desired working hours has a significant negative coefficient with over-employment resulting in greater dissatisfaction relative to underemployment, *ceteris paribus*. What is interesting is that the coefficients of variables capturing hour constraints are roughly the same for columns (1) and columns (2) and slightly different for column (3). This is a good sign that the three subjectively measured variables are perceived to be discrete in nature. A small portion of this dissatisfaction with working hours is likely to be captured by the satisfaction with the work it self variable but in general employees can effectively distinguish this aspect of job from other non-pecuniary aspects. The estimated coefficients for over-employment and under-employment indicate that working more hours than you actually desire has larger impact (negative) on job satisfaction compared to working less than you actually desire. This result should not come to a surprise since over-employment is prevailing in the U.K. (see chapter 2).

The establishment size also affects negatively the overall job satisfaction and all the categories have roughly the same magnitude. This result by it self is of course meaningless. But the exact characteristics associated with a large firm that have a negative impact on job satisfaction are unknown. This is verified by specification (3) which includes the satisfaction with the work it self. It seems that this variable absorbs all the explanatory power of the firm size variable which now becomes insignificant. The same applies for the promotion opportunities and to some extent to the public sector variables. The latter remains significant in all specifications but significance drops slightly in regression (2) and noticeably in regression (3). This fact is potentially suggesting that public sector employees derive job satisfaction to a great extent from the actual work they are doing.

To conclude with the employment aspects, we discuss union membership and working part time, relative to working full time. Participating in a union provides a negative and significant effect in column (1) and (2), (even with a noticeably reduced coefficient) but insignificant for (3). All the independent effect of unionism in job satisfaction in column (1) seems to have been embodied in the satisfaction with the work it self. To place this differently, being happy with the actual work it self is the crucial parameter that is likely to discourage employees to join a working place union.[31] Finally, part time employment would be expected to increase happiness with job in the case where undertaking a part time job is a discreet choice stimulated by personal characteristics. In this sense, the notion of labour market flexibility can be highlighted since part time employment becomes a choice and not a necessity. In other words, people decide to work in a part time job because they appreciate the employment characteristics of these jobs and not due to unavailability of suitable full time jobs. It has been mentioned before that for some countries, a large proportion of those working part time would prefer to work in full time job. Evidence especially from column (2) of table 3.6

[31] To verify this we also estimated a regression with 'satisfaction with the work it self' being the only subjectively measured variable, apart from the dummies accounting for over-employment or under employment. The coefficient on unionism still remained insignificant.

suggests that this could not be the case for the British labour market since being a part time employee increases the chances of being in a higher job satisfaction category.

3.9.3.1 The effect of demographic characteristics

Apart from the satisfaction with payment, being a woman increases the chances of reporting higher satisfaction level. This result of course is not surprising and could be related to the selectivity issue mentioned earlier. But since women's satisfaction is not the main interest here there is not a particular reason to account for this using for example a two-steps Heckman model dealing with self-selectivity.

Coming to education, there is evidence that the more educated you are, the more the chances of reporting lower job satisfaction relative to someone who has no educational qualifications. The reason for this could be the fact that employees with higher education is possible to have augmented expectations from their job compared to employees with lower or no qualifications. Moreover, coefficients on educational background do not vary significantly even when information about satisfaction with security and the work it self is used (columns 2 and 3). The tendency though is for these coefficients to reduce in magnitude when satisfaction with the work it self is introduced, possibly indicating that some individuals with educational qualifications are not happy with their actual occupation. For example, an English literature graduate finding her self working in sales.

Having children has some minor implications for job satisfaction only for specifications (1) and (2). But any significance is lost for the specifications (3). Finally, our results tend to verify the perception (Clark et al, 1996) that the relationship between age and job satisfaction is a u-shaped one.

3.9.4 Subjective covariates, random effects, fixed effects and unobserved heterogeneity.

Random Effects estimation tackles unobserved heterogeneity explicitly, using the methods and assumptions described in section 3.8.1. In comparison to other studies, RE may not be of such importance since the subjective variables we are using absorb a large portion of it. This argument can be supported by looking at the estimated value of ρ which, as discussed previously, gives an indication of the proportion of the variance explained by unobserved individual heterogeneity. In this sense, the value of 0.33 that ρ takes in (1) means that 33% of the total variance in job satisfaction can be attributed to the time invariant, individual specific unobserved term. When we also use the satisfaction with job security as a covariate, the value of ρ becomes 0.29 implying that this covariate by it self can account for a portion (even small) of the unobserved heterogeneity. Finally, as collumn (3) indicates, the most profound effect in tackling heterogeneity comes from the inclusion of the satisfaction with the actual work. In this case ρ becomes 0.16 showing that an even larger percentage of unobserved factors that influence the variation of job satisfaction could be handled by using this subjective variable.

As far as fixed effects are concerned, table 3.7 provides the results from regressing overall job satisfaction against subjective and objective covariates, allowing for time invariant parameters to be correlated with the covariates.

Table 3.7 – J.S, Fixed Effects Ordered Logit, BHPS 1991-2004

Varable	*coef*	*t value*
Satisfaction with Payment	0.4837	37.69
Satisfaction with Security	0.441624	34.47
Satisfaction with the work it self	1.12553	62.47
Job Tenure	-0.02629	6.09
Over-employment	-0.59691	16.07
Underemployment	-0.30501	4.59
Promotion Opportunities	0.239404	6.22
Job change	0.2	4.98
Observations	41387	
LR	13132.8	
Pseudo R2	0.3755	

Notes:
1) All reported coefficients are strongly significant at the 1% level.
2) The vector of the additional covariates is the same used in the Random effects estimation

Now the coefficients of the estimated parameters are even larger which can be attributed to the fact that most of the rest of explanatory variables lack significant within variation. Even so, the relative importance of the satisfaction with with the work it self is again emphasized. It must be mentioned that these results (either in a random or a fixed effects setting) need not necessarily apply to all European Countries. Differences in terms of ordering the most important aspects of a job are well possible to arise. For example, in some countries satisfaction with job security can become the most decisive reason for explaining variations in Job Satisfaction. For instance, a recent European level study by Nicoletti (2006) finds that job security is more important in Ireland,Italy, Greece, Spain and Portugal. This finding is undoubtedly striking and is raising research questions (above the scope of this chapter) about the reasons for this differentiation.

3.9.5 Estimates from a "conventional" specification

As we mentioned above, we also estimate a conventional job satisfaction equation in a form similar to that of Clark and Oswald (1996). However, we do not restrict our view to just the first wave of BHPS as these authors did. Of course we include educational[32] and occupational dummies as well as the usual year dummies among the other demographic characteristics. In an additional specification, there is a variable that refers to the non-wage and household income. The reason for doing so is to ensure that the level of non-earned income is taken into account since some employees possessing a substantial amount of non-labour or household wealth may have such preferences that even with a low wage (and thus a substantial gap between actual and comparison wage), may still want to participate in the labour force without considering their remuneration as a source of job dissatisfaction.

Table 3.8 presents the results from a specification that is almost identical to the specification in table 3.6 apart from the fact that the subjective covariates have been replaced by the wage (lnwage) and the reference wage (lnreference). In addition, apart from the full sample estimates we also present separate results from males and females.

It is evident that both the wage and the reference wage act on job satisfaction significantly and in the expected direction. To be more specific, a higher wage is associated with an increased probability of being in a higher satisfaction category. The same applies for the reference wage since the higher the gap between the wage and the reference wage, the higher the probability of being in a lower job satisfaction category. Interestingly, when we experiment with a specification that also includes the satisfaction with payment (results not reported) , the reference wage becomes totally insignificant.

[32] As far as the educational variables are concerned, we use an augmented specification compared to table 3.6. Some educational categories that had been nested within other categories are now presented separately.

Comparing the results with those of Clark and Oswald, our estimates for the wage and the reference wage are significantly elevated. Obviously we use all available BHPS waves and the range of explanatory variables is more extended for both the wage and the job satisfaction equation. Nonetheless, our estimates converge when it comes to age and sex. Moreover the wage variable remains significant even if we take out the reference wage, something that is not happening in the Clark's and Oswald's paper. This of course is difficult to interpret but a first guess leads again to suspicions about the structural synthesis of both equations. For example the union variable is included in both of them. However the inclusion in the wage equation aims to capture the influence that unionism has on wage while in the job satisfaction equation can be related to non pecuniary aspects such as job security or working conditions that can be related to job satisfaction and without the union variable wouldn't be taken into account.

Finally, as mentioned above, we split the sample between males and females. The reason for doing so is to examine whether some variables are particularly important for each of the two genders, as far as job satisfaction is concerned. We notice that the magnitude of wage variable is less for women than it is for men but significant in both cases. However, the variable that captures the reference or comparison wage becomes now insignificant for women. This indicates that for women the relevant pay does not constitute a statistically significant parameter that affects job satisfaction, at least in this kind of econometric setting. It would be too strong to support that women are not interested in the comparison wage but this result could potentially point out a self-selection process in the sense that women on average sort them selves into better paid jobs in which the gap between the payment and the relevant payment is higher.

The union variable is similarly negative and significant for both genders but it seems that the age is a more decisive job satisfaction parameter for men than it is for women. An interesting result comes from the variable that captures the contribution of the employment status of the spouse. For women, if the spouse works, it is an

insignificant parameter for increased job satisfaction while for men it becomes significant. It looks like women in paid employment do not condition their job satisfaction upon whether their spouse works. But men could be feeling much more satisfied through a pecuniary channel, meaning that the additional income flowing into the household is a sufficient parameter for alleviating a possible dissatisfaction about their payment. Of course there could also be a net life satisfaction effect (which subsequently influences job satisfaction) just from the fact that the spouse works!

The insignificance in the variable that indicates full time employment is a sign that on average (and considering all other parameters constant) women do select themselves into employment type according to a job satisfaction criterion. If for instance women had on average strong preference towards part-time employment but were forced to work full time due to the unavailability of suitable part-time jobs, we would expect a negative and significant sign in the full time job dummy.

In the last column of table 3.8, the job satisfaction equation for women is augmented by two additional variables, the household income and the non-labour income (in a natural logarithm form), for the reason we explained above. Both of them get a significant coefficient at the 5 and 1 percent level respectively. Moreover the wage variable becomes know less significant (at 5% from less than 1% that it was before) while the magnitude drops slightly. However, an analogous specification for men produced (result not reported) an insignificant coefficient for the household income and a significant one for the non-labour income. This can be evidence supporting a social view for the breadwinning role of men.

3.4 Explaining Job Satisfaction differences between two consecutive periods – Fixed effects estimation

The results presented so far have focused on a detailed examination of the determinants of life satisfaction. The scope of this chapter is also to identify the

determinants of changes in job satisfaction. In other words, what makes people report a different satisfaction level in the next period? Could it be, for instance, a change in life satisfaction or would simply an increase in the satisfaction with security be enough for reporting higher satisfaction levels in the next period? This analysis could be useful in answering some questions about potential labour market reformations, if of course the main concern of policy makers is to maximize the utility people derive from their working place. For example, would an increase in job security be more appreciated by young employees or prime age employees?

Our efforts to answer these questions can be assisted by the panel nature of our dataset. The econometric approach will be implemented with a fixed effects estimator which essentially is a first differences estimator which takes into account the variation between period t and t-1. In principle, fixed effects estimation for multiple categories is usually dealt with a conditional logit (CL) approach. However in our case two difficulties appear: One of the main assumptions of the CL is that the characteristics *of the categories* affect the individuals' likelihood of being in them. For example, if the dependent variable is the choice between goods, the price of each of the goods clearly has an impact on the likelihood of selecting one category, since the price is not the same for all the goods. On the other hand, when income is the variable of interest, the standard multinomial logit is sufficient since income is uniquely identified for each individual. Our specification fits better the latter. The reason is that the expected sign of the variables coefficient must necessarily be the opposite for the alternative categories, if we want to have a meaningful interpretation.

To be more analytical, we look at differences in job satisfaction for a single individual between two consecutive periods. We classify these differences in three categories: The first one includes those individual who didn't report any difference in job satisfaction between 2 periods. The second one involves all people who reported a decrease in their job satisfaction while the last category refers to employees who reported an increase in their (subjective) job satisfaction between two periods. We then deploy a

multinomial logit model with reference to the first category and since fixed-effects estimation means that time-invariant parameters like age necessarily drop-out, we run two separate regressions, one for young employees and the other for prime age employees. Similarly, one can do the same for different groups like men and women or married and single employees. At this point we need to stress out that in the literature (at least to the best of our knowledge) there is scarcity in studies examining the determinants of the differences in job satisfaction and as explained above, there is a good ground for policy applications in these terms.

In this case we deal with heterogeneity in two levels and following the same logic: Firstly, personality traits are well possible to have an impact only in the levels of job satisfaction but not in job satisfaction differences. The reason is that by taking first differences across individuals, the researcher can remove all time invariant (unobserved) factors that were (potentially) correlated with the repressors in our previous static estimations. Secondly, our strategy involves again the use of subjective dependent variables. As explained and argued before, this can account for many heterogeneous issues such as interpersonal comparisons and expectations formation.

Table 3.9 presents how the probability of reporting either an increased or decreased satisfaction differential between 2 periods is affected by the differences in various explanatory factors. For example, the first line of the table shows that for young employees, an increase in the satisfaction with payment is associated with a 15.6% probability of reporting higher overall job satisfaction. This detailed breakdown is useful since it allows comparisons between explanatory variables and population groups.

The multinomial marginal effects results show that the differences between young and prime age employees are small when it comes to the probability of reporting an increased JS but the differences become noticeable for the probabilities of reporting a decreased JS. An increase in satisfaction with payment stimulates an increase in the probability of reporting higher job satisfaction in the next period. The relative figures are

15.6% for the young and 15.1% for prime age employees. This difference in the predicted probability of reporting an increased JS level goes up when we examine satisfaction with security. More specifically, an increase in job security for the young, raises this probability by 15,7% in comparison to a 13.2% for the prime age workers.

Among all subjective measures we use, what seems to have the most significant predicting value is the satisfaction with the work it self. The figure is around 30% for both groups. But for this JS measure, what distinguishes young and prime age employees is the expected magnitude in the probability of reporting a diminished job satisfaction in relation to the previous period. If satisfaction with the work it self does increase between two consecutive periods, the probability that the cohort of young employees will report a lower overall JS drops by 18.4%, while the percentage for employees above 25 is 11. The relevant figures for satisfaction with job security are 7.1% and 3.9% respectively. It is evident then that for young employees, security and the work it self weight much more heavily than they do for prime age employees. This result makes sense as it would be realistic to assume that workers at the early stages of their employment life have less searching experience than senior employees and are more likely to end up to a job that does not fulfil their expectations towards security and the actual aspects of the work. It must be mentioned that a control for a job change between two periods is included since moving to a new job is expected to have a positive impact on job satisfaction. This effect is positive and significant for both cohorts.

Hour constraints on the other hand can be a serious consideration for employees above 25 but not for young employees. Of course, moving from working hours dissatisfaction to satisfaction is welcome as it is associated with a 7.4% more chances of reporting higher JS in the next period for the young and 8.6% for the old. But at least for the former, it does not reduce the probability of reporting a lower job satisfaction. However for the senior employees, the opposite is the true since the relevant coefficient is negative and significant (-0.276). Finally all the other controls have either a small or an insignificant impact. Briefly, we also controlled for full time to part time and part time to

full time transition, changes in commuting time, movements between the public and the private sector, and job opportunities.

3.5 Job Satisfaction Profiles

This last section of the chapter is concerned with the estimation of job satisfaction profiles. Although it is evident from table (4) that tenure is negatively related to job satisfaction, there has been no research (at least to the best of our knowledge) as to whether this negative relationship exhibits a positive or a negative rate of decrease. Our previous result also provided strong statistical support that whoever changes a job has an increased probability of being on a higher job satisfaction scale the period after the job change. However, it is not clear whether this increased job satisfaction persists or drops again as a consequence of a fatigue or disappointment effect. Evidence in favour of a convex relationship would support the notion that the job satisfaction of an employee diminishes up to a point when it starts to increase again. This behaviour could be consistent with the idea of cognitive dissonance that was discussed in the prologue of this chapter.

For these reasons we estimate a job satisfaction equation in which job tenure enters the specification in both a quadratic and a linear manner (along with all the usual explanatory variables) while age is taken into account only linearly. In this sense we examine the non linear relationship between job satisfaction and job tenure under the condition that age remains constant. We do not use a quadratic specification for age since it is likely to be a degree of correlation with the squared transformation of tenure.

The estimated results for the job satisfaction equation are evolved from an ordered probit setting. On the left hand side of the equation we use differences in job satisfaction between two consecutive periods while the usual subjective covariates are present on the

other side, along with the standard personal and demographical characteristics. What we are particularly interested to examine is if the inclusion of the dummy variable that indicates a job change has any kind of impact on the rate at which job satisfaction increases or decreases over tenure.

The pattern of job satisfaction after a job change is an issue that has been overlooked in the relevant literature. It is evident that four distinct outcomes could emerge:

a) Job satisfaction continues to fall at a decreasing rate (possibly at a less decreasing one, compared to the job satisfaction pattern in the previous job.

b) Job satisfaction falls at an increasing rate, implying a concave relationship with tenure.

c) Job satisfaction follows an upward path which peaks at a certain tenure and then starts falling again.

d) Job satisfaction keeps falling as tenure increases with no trend reversing signs.

In our empirical approach we estimate job satisfaction differences between two consecutive periods[33]. We then regress this difference against a set of dummy variables that account for three levels of satisfaction with the payment, security and the work it self. These levels are distinguished as "dissatisfaction" (which is the reference category), "neither satisfaction or dissatisfaction" and "satisfaction". On the 1 to 7 scale, the first level accounts for job satisfaction from 1 to 3, the second level for job satisfaction equal to 4 and the last level from 5 to 7. The rest of the variables are the same as in the previous specifications apart of course from the squared version of tenure and the omission of age squared.

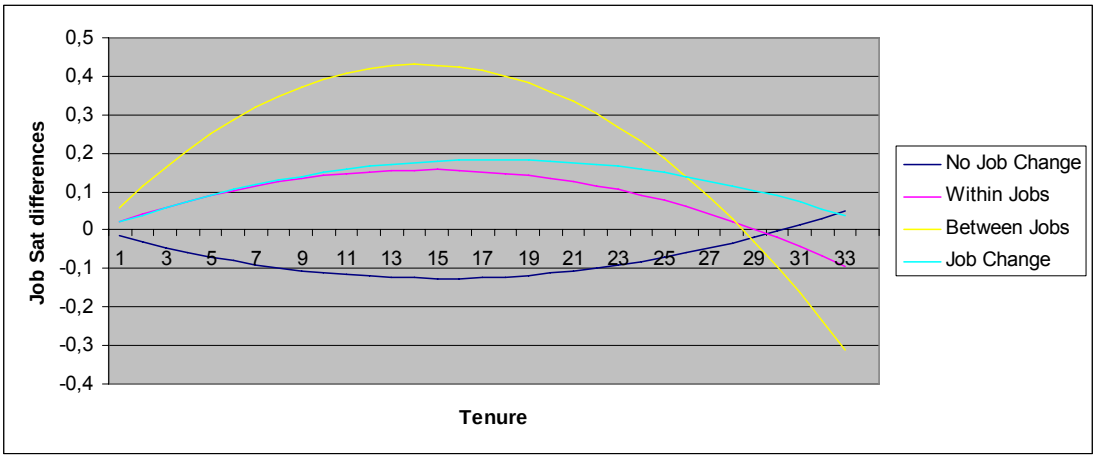
[33] Consequently now only those respondents who are interviewed for at least two consecutive periods are included in the sample

Table 3.10 presents the results of the estimated parameters in four specifications. The first column depicts the relationship between the change in job satisfaction and a quadratic specification of job tenure conditional on job change. In the second column, job satisfaction is not conditioned upon a job change and thus the tenure parameters are free from this effect. The last two columns arise from a virtually same specification as in column one but with a focus on those employees who moved within and between employers respectively.

Our results clearly indicate that the job satisfaction pattern differs significantly between those who change jobs and those who do not. Job movers face an upwards sloping satisfaction profile which indicates that they experience a trend of positive job satisfaction differentials between subsequent periods, apart of course from the lump sum injection on the levels of job satisfaction. On the contrary, workers who stay within the same job (and do not get promoted) experience a u-shape job satisfaction profile which obviously implies that the path of negative initial satisfaction differentials is reversed after a certain value of tenure. Finally, as shown in figure 3.1, earnings profile differs according to whether employees have moved within or between jobs. In this sense, employees who moved within their firm have a more flat satisfaction-tenure curve than employees who changed employer.

Figure 3.1

Job Satisfaction Profiles – BHPS, 1991-2004



3.6 Conclusion

In this chapter we examined the issue of job satisfaction from various angles in an attempt to provide literature with a more accurate view on this issue since we explicitly consider subjectively measured variables concerning job sub domains. Our results indicate that all subjective variables enter the job satisfaction equation in a very significant manner. It is also evident that among all subjective covariates, the satisfaction with the actual work is the most important determinant of job satisfaction. Nevertheless, a sense of scepticism should arise from both the high magnitude of this variable and its significance. Our robustness analysis shows that the inclusion of subjectively measured variables has a significant impact only upon those variables which are intuitively related with them. We argue that this is a good sign in favour of the hypothesis that subjective measures are in deed picking up part of the individual heterogeneity, i.e. those factors that have a decisive impact on people's job satisfaction but cannot be easily quantified or revealed in a survey.

In an interesting extension, we also considered job satisfaction differences between two consecutive periods in order to decompose the reasons for reporting a higher or a lower job satisfaction in the next period. We split the sample between young and prime age employees to find that both groups have striking similarities in terms of the determinants of next period job satisfaction. Finally, the examination of job satisfaction profiles showed that changing a job can have a positive effect on the evolution of job satisfaction but at a diminishing rate. In any case, whoever changed employer is more likely to experience a steeper job satisfaction profile, compared to an employee who changed job within the same employer.

Table 3.3

Job satisfaction in the U.K. – BHPS, 2004

Variable	Sanple means[34] % (raw numbers)	Mean Satisfaction (SD)	T-Test/F test[35]
Sex			
Female	51.87 (3835)	5.52 (1.23)	7.85***
Male	48.13 (3559)	5.29 (1.28)	
15-25 years old	14.48 (1057)	5.31 (1,35)	11,50***
26-45 years old	52.64 (3843)	5.4 (1,23)	
46-55 years old	20.90 (1526)	5.37 (1,27)	
56+ years old	14.48 (875)	5.63 (1,22)	
white	97.66 (7635)	5.41(1,50)	2.114
non white	2.34 (183)	5.19(1,52)	
no qualifications	9.12 (657)	5.58 (1.30)	5,24***
Higher degree	35.21 (2536)	5.37 (1.24)	
First degree	17.66 (1272)	5.36 (1,25)	
gce a levels	12.91 (930)	5.29 (1.34)	
gce o levels	17.80 (1282)	5.48 (1.22)	
cse	3.40 (245)	5.46 (1.20)	
other	3.90 (281)	5.42 (1.28)	
Married	55.40 (4104)	5,49 (1.18)	-6,62***
non married	44.50 (3290)	5,30 (1.35)	
No children	62.78 (4642)	5.39 (1.29)	1.88
One child	16.89 (1249)	5.42 (1.23)	
two or more children	20.33 (1503)	5.46 (1.20)	
			31.82***
Overemployed	32.03 (2355)	5.08 (1.34)	
Underemployed	5.89 (433)	5.29 (1.29)	
Unconstrained	62.08 (4564)	5.59 (1.18)	
Firm Size			
1-9	19.05 (1391)	5.55 (1.27)	11,13**
10-49	30.64 (2237)	5.50 (1.21)	
50-99	11.49 (839)	5.34 (1.21)	
100-199	10.49 (766)	5.24 (1.31)	
200-499	11.62 (848)	5.33 (1.27)	
500-999	6.34 (463)	5.20 (1.32)	
>1000	10.36 (756)	5.30 (1.28)	

[34] Longitudinal Weights applied : The longitudinal weight reflects the population at the time of sample selection, and is generally the most appropriate for longitudinal analysis which compares data from more than one year. The panel's longitudinal weight is recalculated each year to take into account further non-response or attrition occurring that year.

[35] *** : denotes significance at 1% level , ** : denotes significance at the 5% level.

Table 3.4

Variables Description

jbsat2	Satisfaction with payment
jbsat4	Satisfaction with security
jbsat6	Satisfaction with the work it self
Age	Age
Age square	(Age * Age)/1000
sex	Being female (relative to being male)
Job tenure	Years of experience in current job
Soc2	Occupational Dummy : Professional Occupations
Soc3	Occupational Dummy : Associate Professional and Technical
Soc4	Occupational Dummy : Admin and Secretarial
Soc5	Occupational Dummy : Skilled Trades
Soc6	Occupational Dummy : Personal Service
Soc7	Occupational Dummy : Sales and Customer Service
Soc8	Occupational Dummy : Process, Plant and Machine Operatives
Soc9	Occupational Dummy : Elementary Occupations
hours2	Being over-employed (relative to being unconstrained)
hours3	Being underemployed
travel2	Travel time to work :15-30 minutes (relative to 15 min or less)
travel 3	31-45 minutes
travel 4	46 or more
jobopps	Promotion opportunities at the working place
bonus	Whether the employee participates in a profit sharing or a bonus scheme
sect2	Working in the public sector (relative to working in the private sector)
sect3	Working in the armed forces and NGO's
size2	Employees working in the job place : 10-50 (relative to 10 or less)
size3	51-100
size4	101-500
size5	501-1000
size6	1001 or more
child2	Having one child (relative to no children)
child3	Having two ore more children
house	Renting (relative to own the house)
union	Union present in the working place
educ2	Higher degree (Msc, PhD etc) (Relative to no education)
educ3	First degree (BA,BSc) and teaching QF
educ4	A levels
educ5	O Levels
educ6	CSE's
educ7	Other qualifications
spouse2	Spouse doesn't work (relative to no spouse)
spouse3	Spouse works
Change	Having changed job in the previous period
Jbpt	Working part time

Table 3.5

Job Satisfaction without Subjective Covariates, BHPS 1991-2004

	Random Effects Ordered Probit	
variable	coef	tstat
Job Tenure	-0.01***	7.77
Sex	0.232***	12.82
age	-0.025***	6.27
agesqr		9.61
hours2	-0.469***	39.17
hours3	-0.244***	11.87
travel2	-0.03*	2.35
travel3	-0.015	0.75
travel4	-0.054*	2.53
sect2	0.208***	11.79
sect3	0.241***	5.04
size2	-0.042**	2.82
jobopps	0.318***	27.27
size3	-0.128***	6.69
size4	-0.151***	7.57
size5	-0.156***	8.11
size6	-0.148***	6.37
child2	0.064***	3.68
child3	0.126***	6.61
house	-0.002	0.09
union	-0.115***	7.87
educ2	-0.259***	9.68
educ3	-0.417***	13.27
educ4	-0.306***	9.92
educ5	-0.181***	6.41
educ6	-0.075	1.71
educ7	-0.174***	4.54
spouse2	0.092***	3.93
spouse3	0.074***	4.48
change	0.175***	13.81
jbft	0.115***	6.38
μ1	-2.94***	33.76
μ2	-2.426***	28.044
μ3	-1.812***	21.01
μ4	-1.369***	15.88
μ5	-0.497***	5.77
μ6	1.275***	14.76
ρ	0.399***	75.138
Year dummies	YES	
Log likelihood	88026.3	
Likelihood Ratio	4594.13	
Observations	63451	

Table 3.6

Job Satisfaction and Subjective Covariates, BHPS 1991-2004

	R.E Ordered Probit (1)		R.E Ordered Probit (2)		R.E Ordered Probit (3)	
variable	*Coef*	*t value*	*Coef*	*t value*	*coef*	*t value*
Jbsat2	0.38***	100.35	0.34***	87.66	0.27***	73.08
Jbsat4			0.28***	74.48	0.24***	64.03
Jbsat6					0.66***	138.05
age	-0.32**	7.92	-0.02**	3.82	-0.02**	5.76
age square	0.000532**	10.26	0.0003215**	6.43	0.0003033**	6.74
sex	0.22**	12.00	0.18**	9.94	0.14**	9.43
Job tenure	-0.0093**	7.27				
soc2	0.0049	0.18	-0.0017	0.06	-0.04	1.68
soc3	0.04	1.37	0.03	1.11	0.00041	0.02
soc4	-0.14**	5.57	-0.14**	5.67	0.03	1.57
soc5	0.00	0.11	0.02	0.68	0.06	2.59
soc6	0.12**	4.14	0.09*	3.21	0.08*	3.22
soc7	-0.15**	5.13	-0.19**	6.51	-0.03*	1.26
soc8	-0.18**	5.88	-0.15**	5.01	0.04	1.59
soc9	-0.13**	4.17	-0.14**	4.34	0.06	2.22
hours2	-0.42**	34.59	-0.43**	35.18	-0.35**	29.65
hours3	-0.14**	6.69	-0.10**	4.95	-0.16**	7.71
travel2	-0.04*	2.99	-0.03	1.93	-0.02	1.72
travel3	-0.05	2.28	-0.01	0.46	-0.01	0.56
travel4	-0.13**	5.82	-0.08**	3.70	-0.07**	3.58
sect2	0.18**	9.38	0.13**	6.75	0.06**	3.59
sect3	0.09*	1.69	0.01	0.13	0.01	0.18
jobopps	0.26**	21.16	0.16*	12.83	0.10**	8.43
bonus	0.02	1.72	-0.00269	0.21	0.01	0.77

Table 3.6 continued

size2	-0.03	1.90	-0.03	2.09	-0.01	0.98
size3	-0.12**	6.12	-0.12**	6.09	-0.06	3.24
size4	-0.16**	7.54	-0.15**	7.31	-0.08**	4.15
size5	-0.16**	8.03	-0.15**	7.43	-0.06*	3.03
size6	-0.15**	6.31	-0.13**	5.39	-0.06	2.47
child2	0.06**	3.53	0.06*	3.22	0.03	1.83
child3	0.11**	5.67	0.10**	5.06	0.05*	2.66
house	0.06*	3.39	0.05*	2.89	0.04*	2.96
union	-0.14***	9.37	-0.09**	5.85	-0.01	0.95
educ2	-0.32*	11.67	-0.29**	10.79	-0.23**	9.68
educ3	-0.51**	15.33	-0.47**	14.57	-0.31**	11.06
educ4	-0.35**	11.14	-0.32**	10.44	-0.25**	9.60
educ5	-0.21**	7.39	-0.21**	7.36	-0.15**	6.43
educ6	-0.13*	3.10	-0.12*	2.90	-0.11	3.06
educ7	-0.21**	5.43	-0.19**	5.10	-0.17**	5.16
spouse2	0.08	3.21	0.07*	2.97	0.05*	2.23
spouse3	0.04	2.39	0.02	1.31	0.01	0.91
change	0.13***	9.67	0.16**	11.89	0.10**	7.72
jbpt	0.04	2.32	0.05	2.69	0.10**	5.84
μ1	-1.98	21.25	-0.60	6.48	1.77	20.67
μ2	-1.42	15.36	-0.01	0.10	2.55	29.90
μ3	-0.74	7.98	0.72	7.76	3.51	41.06
μ4	-0.2445	2.65	1.24	13.37	4.18	48.72
μ5	0.71	7.70	2.24	24.15	5.41	62.18
μ6	2.61	28.07	4.21	44.83	7.58	85.06
ρ	0.33	56.24	0.29	50.81	0.163	24.97
Year dummies	YES		YES		YES	
Log likelihood	-75128		-72325.00		-72325.00	
Likelihood Ratio X2	14817.5		20423.36		40515.01	
Observations	57813		57813		57813	

Notes: T statistics are given as absolute values. *,**,*** denote significance at 5% , 1% and <1% respectively.

Table 3.8 – Job Satisfaction and Reference Income – BHPS, 1991-2004

	Ordered Probit **pooled sample**		*Ordered Probit* **women**		*Ordered Probit* **men**		*Ordered Probit* **women (2)**	
variable	Coef	t value	Coef	t value	Coef	t value	Coef	t value
ln monthly income	0.213***	11.30	0.141***	4.07	0.132***	5.31	0.116*	2.14
ln reference income	-0.122***	8.08	0.047	1.44	-0.099***	5.45	0.017	0.31
ln household income							0.065*	2.34
ln non-labour income							0.018**	2.97
age	-0.039***	13.81	-0.058***	14.07	-0.032***	7.74	-0.059***	9.37
sex	0.227***	20.73						
agesquare	0.001***	16.46	0.001***	16.02	0.000***	9.60	0.001***	10.83
hours2	-0.444***	43.90	-0.414***	29.41	-0.477***	32.62	-0.429***	20.78
hours3	-0.244***	13.25	-0.197***	7.40	-0.267***	10.40	-0.208***	4.95
travel2	-0.070***	6.63	-0.057***	3.77	-0.068***	4.59	-0.080***	3.56
travel3	-0.076***	4.79	-0.027	1.28	-0.119***	5.03	-0.03	0.97
travel4	-0.124***	7.51	-0.148***	6.75	-0.077**	3.06	-0.140***	4.36
Higher Education	-0.411***	12.81	-0.353***	8.25	-0.504***	10.29	-0.316***	5.27
Higher Qualifications	-0.246***	14.08	-0.256***	10.59	-0.239***	9.36	-0.301***	7.94
University Degree	-0.409***	18.65	-0.399***	13.01	-0.425***	13.36	-0.421***	9.10
Nursing Qualifications	-0.347***	12.12	-0.359***	6.54	-0.346***	9.70	-0.366***	4.82
A levels	-0.280***	14.43	-0.287***	10.57	-0.274***	9.73	-0.308***	7.37
O levels	-0.160***	9.24	-0.165***	6.59	-0.168***	6.94	-0.221***	5.63
CSE (2-5)	-0.062*	2.36	-0.048	1.36	-0.099*	2.48	-0.067	1.14
Commercial Qualific.	-0.099**	2.94	-0.106	0.83	-0.139***	3.75	0.045	0.27
Other Qualifications	-0.089	1.48	-0.157	1.86	-0.014	0.16	-0.448***	3.55
soc2	-0.063**	3.16	-0.071**	2.70	-0.019	0.62	-0.094**	2.64
soc3	-0.055**	2.99	-0.079**	3.11	-0.01	0.38	-0.085*	2.41

Table 3.8 continued

soc4	-0.222***	13.07	-0.335***	12.56	-0.150***	6.28	-0.327***	8.33
soc5	-0.090***	4.55	-0.105***	4.52	-0.052	1.09	-0.134***	3.84
soc6	-0.011	0.55	-0.122***	3.94	0.048	1.70	-0.054	1.17
soc7	-0.203***	9.11	-0.237***	6.73	-0.164***	5.36	-0.189***	3.58
soc8	-0.248***	11.92	-0.232***	9.23	-0.319***	8.06	-0.236***	6.21
soc9	-0.201***	8.65	-0.244***	7.64	-0.163***	4.66	-0.240***	4.69
sect2	0.119***	9.01	0.122***	6.19	0.130***	7.08	0.133***	4.67
sect3	0.146***	3.59	0.068	1.20	0.225***	3.85	0.12	1.51
size2	-0.025*	2.14	-0.032	1.80	-0.019	1.16	-0.009	0.32
jbopps	-0.255***	25.98	-0.293***	20.85	-0.229***	16.54	-0.277***	13.36
bonus	0.049***	4.65	0.047***	3.33	0.050**	3.10	0.042*	2.03
size3	-0.126***	7.95	-0.117***	5.28	-0.126***	5.55	-0.073*	2.23
size4	-0.148***	9.02	-0.137***	6.07	-0.151***	6.32	-0.163***	4.90
size5	-0.142***	9.24	-0.122***	5.80	-0.159***	6.95	-0.079**	2.61
size6	-0.138***	7.13	-0.166***	6.33	-0.105***	3.58	-0.165***	4.44
child2	0.074***	5.52	0.082***	4.10	0.085***	4.53	0.082**	2.82
child3	0.111***	8.28	0.077***	4.06	0.162***	8.31	0.119***	4.21
house	0.018	1.54	0.052**	3.06	0.006	0.33	0.059*	2.04
union	-0.155***	13.96	-0.140***	9.11	-0.155***	9.58	-0.121***	5.33
spouse2	0.120***	6.93	0.051*	2.12	0.189***	6.79	0.038	1.10
spouse3	0.081***	6.95	0.002	0.14	0.132***	8.52	-0.03	1.09
change	0.122***	11.42	0.142***	9.25	0.107***	7.11	0.128***	5.52
jbpt	0.017*	2.04	0.057**	2.76	0.000	0.04	0.116***	3.49
μ1	-2.694***	30.97	-2.986***	25.46	-3.144***	25.39	-2.695***	11.08
μ2	-2.261***	26.14	-2.531***	21.72	-2.731***	22.18	-2.267***	9.35
μ3	-1.743***	20.21	-1.990***	17.13	-2.235***	18.22	-1.708***	7.05
μ4	-1.387***	16.10	-1.584***	13.64	-1.934***	15.78	-1.302***	5.38
μ5	-0.696***	8.08	-0.878***	7.57	-1.253***	10.24	-0.598*	2.47

Table 3.8 continued

μ6	0.704***	8.18	0.529***	4.56	0.153	1.26	0.835***	3.45
Year Dummies	YES		YES		YES		YES	
Log likelihood	-81765.337		-40784.3		-40710.7		-18610	
Likelihood Ratio	6262.12		2584.23		3334.55		1337.22	
Observations	55863		27111		28752		12517	

Notes: Compared to previous results we use an augmented specification for the education variables. T statistics are given as absolute values. *,**,*** denote significance at 5% , 1% and <1% respectively

Table 3.9

Job satisfaction differences, BHPS 1991-2004: multinomial marginal effects

	Young employees (<25)		Senior employees (>25)	
	Probability of JS ↑	Probability of JS ↓	Probability of JS↑	Probability of JS ↓
Satisfaction with Payment ↑	0.156 (8.42)**	-0.074 (-3.77)**	0.151 (22.19)**	-0.054 (-8.28)**
Satisf. with security ↑	0.157 (8.48)**	-0.071 (-3.74)**	0.132 (19.70)**	-0.039 (-5.96)**
Sat. with the work it self ↑	0.30 (15.51)**	-0.184 (-10.27)**	0.299 (40.96)**	-0.11 (-18.69)**
Constr. --> Unconstrained	0.074 (3.76)**	-0.001 (-0.08)	0.086 (11.96)**	-0.276 (-4.03)**
F.time to P. Time Trsansition	0.328 (0.74)	-0.043 (-0.93)	0.032 (2.12)*	0.013 (0.84)
Job Change between t and t-1	0.069 (4.52)**	-0.016 (-0.95)	0.085 (11.99)**	-0.019 (-2.82)
Commuting time ↓	0.038 (1.96)*	-0.039 (-1.91)*	0.023 (2.77)*	0.017 (1.93)
Public Sector to Private sector	0.065 (1.71)*	-0.054 (-1.29)	0.045 (2.59)*	-0.021 (-1.21)
Satisfaction with Payment ↓	-0.078 (-4.62)**	0.193 (9.64)**	-0.043 (-6.60)**	0.154 (21.72)**
Satisf. with security ↓	-0.052 (-3.05)*	0.157 (7.76)**	-0.052 (-8.21)**	0.149 (20.93)**
Sat. with the work it self ↓	-0.15 (-9.70)**	0.30 (16.19)**	-0.092 (-15.35)**	0.299 (42.58)**
Unconstr. --> Constrained	-0.026 (-1.53)	0.097 (4.54)**	-0.028 (-4.43)**	0.084 (11.61)**
P. Time to F. Time Transition	0.011 (0.35)	-0.076 (-2.29)*	0.011 (0.85)	-0.010 (-0.76)
Job Change between t and t-1	0.069 (4.52)**	-0.016 (-0.95)	0.085 (11.99)**	-0.019 (-2.82)*
Private sector to Public Sector	0.019 (0.48)	0.041 (0.87)	0.0018 (0.11)	0.022 (1.21)
Job Opps	0.043 (2.95)*	0.0635 (3.87)**	-0.0046 (-0.89)	0.031 (5.89)**
Number of Observations :	4302		30231	
Log likelihood:	-3592.4518		-25841.943	
Pseudo R square :	0.2287		0.1875	

Notes: T statistics are given as absolute values. *,**,*** denote significance at 5% , 1% and <1% respectively. Specification also includes year dummy variables

Table 3.10 – Job Satisfaction Profiles, ordered probit estimation. BHPS , 1991-2004

	Spec (1)		Spec(2)		within jobs		Between jobs	
variable	coef	t stat	coef	t stat	coef	t stat	coef	t stats
neither sat. or disat. with payment	0.104***	4.86	0.109***	5.20	0.032	0.62	0.146**	2.85
satisfied with payment	0.207***	16.00	0.215***	16.83	0.246***	8.04	0.231***	7.54
neither sat. or disat. with security	0.229***	9.97	0.226***	9.96	0.257***	4.76	0.261***	4.71
satisfied with security	0.328***	20.50	0.314***	19.92	0.387***	10.34	0.373***	9.45
neither sat. or disat. with the actual work	0.470***	19.55	0.468***	19.73	0.671***	11.45	0.447***	7.69
satisfied with the actual work	0.800***	45.66	0.803***	46.28	0.968***	22.39	0.850***	20.47
Job tenure	0.021***	8.25	-0.017***	7.74	0.021**	2.65	0.060***	6.50
Job tenure squared	-0.000602***	6.31	0.0005489***	6.49	-0.000737*	2.06	-0.00211***	5.16
age	0.002**	2.91	0.002**	2.97	0.003	1.96	0.003*	2.39
sex	-0.041***	3.51	-0.041***	3.49	-0.041	1.60	-0.057*	2.06
hours2	-0.076***	6.89	-0.085***	7.77	-0.049*	2.02	-0.103***	3.98
hours3	-0.032	1.44	-0.021	0.97	0.025	0.39	-0.013	0.28
jbopps	-0.038***	3.42	-0.054***	4.91	-0.011	0.41	-0.036	1.41
bonus	-0.015	1.28	-0.028*	2.40	-0.017	0.63	-0.022	0.83
child2	-0.004	0.28	-0.01	0.72	-0.012	0.38	0.02	0.62
child3	-0.02	1.48	-0.024	1.80	-0.012	0.38	-0.003	0.11
house	-0.001	0.05	0.008	0.55	-0.029	0.83	-0.006	0.19
union	0.033**	2.66	0.034**	2.76	0.04	1.43	0.007	0.25
spouse2	0.007	0.38	0.009	0.48	0.028	0.62	0.006	0.13
spouse3	0.024	1.84	0.023	1.77	0.008	0.27	0.00046	0.02
change	0.421***	27.04			0.275***	7.94	0.806***	23.77
jbft	-0.00045	0.07	-0.001	0.18	0.012	0.68	0.007	0.36
Observations	42467		43779		8463		8259	
Log likelihood	-66364.813		-68528.4		-12310.1		-13347.29	
LR chi square	5169.95		4531.59		1077.87		1751.37	

Notes : T statistics are given as absolute values. *,**,*** denote significance at 5% , 1% and <1% respectively. Specification includes year and educational dummy variables

Chapter 4

Employees' earnings profiles in the private and the public sector

4.1 Introduction

The aim of this chapter is to explore whether there are any significant differences on average in the earnings profiles between employees in the private and the public sector in the UK. The motivating force of this study is the fact that the relative literature is surprisingly weak, although the issue of wage differentials has been addressed substantially in the labour economics literature in terms of gender, age and ethnicity (for instance Blinder, 1973, Butler, 1982).

It is apparent that any potential wage differentiation between such groups is best explored within rather than between firms. The reason is that each firm has unique cost conditions, faces different demand circumstances and, in general, is characterised by a plethora of special attributes that can potentially lead to different wage realizations between workers with generally the same characteristics. And of course, several other parameters can lead to invalid arguments if a researcher does not take them into account. For example, wage differences between employers in the same firm can be explained by differences in education, special skills, firm specific training and the employee's position in the firm's managerial chart. Even if two employees have identical profiles in terms of observable characteristics (education, training, tenure, sex e.t.c.), any differences in remuneration could be the result of different abilities and/or effort at the job place. This parameter is unknown to the researcher, but visible to the employer only to the extent that monitoring mechanisms exist and provide efficient means of measuring how well workers perform their assigned tasks. These mechanisms become important especially when firms assign a wage on the basis of an implicit contract that does not involve a specific target but implies general duties within the firm. In this case, agency costs and shirking may arise. Examining within firms wage differentials can be better explored using a data like the Workplace Employment Relations Survey (WERS) that provides matching between the employer and the employee.

When the discussion comes to differences in wages across firms, even when all the other relative issues are kept constant, wage differentials might be the result of efficiency wage considerations. Under this, it pays the firm to offer wages above the market clearing level in order to stimulate enthusiasm across employees to boost productivity and to reduce the probability of quits, especially when training costs are high and labour supply scarce. In fact, Krueger and Summers (1988), using a fixed effects setting, propose the efficiency wage theory as an explanation for the significant variation in the inter-industry wage structure they encounter in their data.

As mentioned above there has been a noticeable contribution to the literature from studies analyzing wage differentials either within (for generally similar employees) or between firms. However, examining wage differentials, being essentially a static exercise, does not reveal much information about the life-time evolution of wages. Moreover, even if you assume that two employees who work for different employers start with the same wage, there is no reason to believe that the slope of their earning profiles will necessarily be the same[36]. A difference in the slope could involve several issues such as on the job-training and promotion opportunities. The term slope expresses the rate at which earnings are increased and in a linear specification this rate remains constant.

When comparing earnings profiles between firms a degree of heterogeneity is expected. In this sense, there might be firms that offer a high starting wage but with a fairly flat earnings profile while the opposite could be true for other firms. Of course, especially in large establishments, there is a large number of offered jobs that correspond to a variety of skills, educational backgrounds, previous experience and so forth. However, even after accounting for this heterogeneity (to the extent that the available data allow for this), there must be a firm specific curve that gives an average idea of how earning profiles differ between firms and whether this divergence could result from

[36] In most of what follows, we will be using the term "earning profiles" instead of the more precise (and compatible with Mincer's (1974) analysis) experience-earnings profiles since various proxies have been used for experience like age, tenure and years in the labour force.

factors that characterize the operation of the firm it self or even the sector within the firm (or organization) operates.

The scope of this chapter is to examine whether the wage-earning profiles of the public sector is statistically different from the profile that (on average) is offered to the workers who choose to follow a career path in the private sector. If such a difference is supported by the data, we need to explain it with reference to the special characteristics of each sector. These characteristics, provided that can be efficiently identified and separated, are well possible to attract workers with different preferences or objectives. For example, if on average public sector offers a more secured working environment, workers that dislike risk are more likely to end up in such a job place. This logic can also be extended to account for a variety of other non-pecuniary aspects such as working hours, the ability of using own initiative, the actual work it self and so forth. At the same time, the private sector employment choice can be related to issues that are more pecuniary in nature such as the actual wage, the promotion opportunities (if this is related to a wage promotion) and the possibility of performance payment.

In what follows, section 2 presents the literature of earnings profiles with reference to the two main theories that explain the upwards sloping experience earnings curve, namely the human capital theory and the agency theory. Section 3 discusses the nature of employment in the public and private sector. We differentiate between the two sectors by highlighting that employees in each sector have a different motivational basis. This argument is supported by a variety of studies (for instance Karl and Sutton, 1998, Crewson, 1997, Wright 2001). We also show, using a UK dataset, that there is a significant difference between public and private sector employees in the values they attribute to a list of job characteristics. In sections 4 and 5 we briefly describe the data and we estimate the probability of being employed in the public sector. In sections 6 and 7 we estimate the relevant earnings profiles for the public and private sector and we also discuss the issue of selectivity and the estimation results. Section 8 concludes.

4.2 Earnings profiles considerations

The analysis of earning profiles has been greatly influenced by the seminal work of Mincer (1974). Mincer proposed an earnings equation in which work experience enters the specification in a quadratic form but schooling years remain a linear explanatory factor of the (log) wage. This specification implies a non-linear relationship between experience and earnings in which earnings increase at first (although at a decreasing rate), reach a peak point and then decline. In fact, a researcher would follow Mincer's approach if he/she wanted to control for career earnings growth. In other words, the main idea was that what lies behind the earning experience relationship is a process of human capital formation.

Subsequent research tried to deviate from human capital considerations and placed emphasis on the incentives that both employees and employers face. In particular, seminal work by Lazear (1979,1981) and Lazear and Moore (1984) promoted the idea of "deferred payment" as a means of reducing the worker's incentive to shirk. In this sense, the employer pays at the beginning of the contractual relationship a wage that is below worker's marginal productivity and at the same time below the wage that this worker could find in alternative working places. At the end of the contract, the worker is paid above his/her marginal productivity. This kind of contract provides an incentive for employees to provide maximum effort since if they shirk and get caught, they will loose earnings in excess of their productivity at the end of their contractual relationship. It is apparent that if a contract like this comes into force, the employer would have a reason to terminate the employment relationship at the particular point of time when productivity becomes equal to the wage. However, such an action would send a negative signal to the market concerning the reliability of this firm and thus make it more difficult to attract workers in the future.

The view that earnings and productivity should diverge in order to mitigate agency problems is supported by the empirical findings by Kotlikoff and Gokhale (1992) who compare the earnings between salespersons and managers in relation to their productivity[37]. The earnings profile of salespersons, whose effort can be inferred by outcomes, was almost identical to their (easily verifiable) productivity. On the other hand, managers experienced a wage that was below their productivity at first and a wage above their productivity at later stages, exactly as Lazear and Moore (1984) suggested.

Topel (1991), provided important empirical contribution in the field by supporting the hypothesis that earnings rise as the result of acquisition of specific human capital. In addition, he highlighted explicitly the endogeneity of seniority. In a strict econometric sense an endogenous variable is potentially correlated with some unobserved variables that are necessarily included in the error term, either because of structural misspecification or because of data unavailability. For example, an employee who is highly satisfied with the working environment (unobserved element) might prefer to stay in a job even if the wage path does not perfectly match his/her preferences. In other words, the variable 'seniority' is capturing satisfaction with non pecuniary aspects of the job and does not completely reflect self-selection into high seniority due to rising earnings profile. Consequently, the issue of selection bias that some authors cite (for example Abraham and Farber, 1987) although present, would alleviate some of its bias effects on the estimated coefficients, provided of course that the unobserved heterogeneity has been taken into account.

Leaving agency theory and human capital considerations aside, an alternative way to explain rising earnings over the life-cycle had been proposed initially by Frank and Hutchens (1993) and Loewenstein and Sicherman (1991). The idea that is also adopted and tested using a US dataset by Neumark (1995) is that individuals may prefer a rising

[37] The issue of productivity measurement remains ambiguous, Kotlikoff and Goghale (1992) infer the age-productivity relationship by observing the compensation of workers who are hired when old since, according to their logic, those workers are being given exactly their marginal products. Alternatively, if avalaible data allows for that, one could observe the wage differentials between workers who are doing exactly the same job but are hired on a different contractual basis (i.e. explicit,emplicit).

earnings profile (implying rising consumption) if they are not disciplined savers and they need an exogenous influence in order to achieve their desirable intertemporal consumption plan. There can also be cases that some people prefer a rising profile than a more flat one, even if the latter implies a higher discounted present value. This is supported by survey data from the above mentioned papers. In particular Neumark (1995) takes into advantage a special feature of the US fiscal environment that includes the deduction of a certain amount of the wage income at source. Each employee then fills a form that describes the rest of his/her financial and demographic conditions which finally determine the amount of refund he/she will receive from the federal government. It is clear that an individual can alternatively under-withhold in the sense of deducting the minimum allowed amount from his/her wage and pay additional income taxes at a later point. According to this study, the majority of taxpayers over withhold (and consequently receive a refund) which according to Neumark (1995) can be viewed as a reflection of a forced saving mechanism as he finds that those who over withhold are indeed on a steeper wage profile. However, his findings should be treated with caution because they are based on the assumption that over-withholding and the choice of a steeper profile are complements. In other words, over withholding depicts a stable picture of preference towards future consumption which is also reflected in the wage profile. But for some individuals a steep wage profile (implying low wage at low tenure) could be a sufficient means of forced saving by it self and thus over-withholding could prove excessive. In such a case, no relationship between refunds and steepness would be expected. Additionally, at low tenure, people on a steep profile who decide to over withhold at the same time is well possible to face liquidity problems.

A point of consideration is the exact nature of the variable that accounts for the human capital formation and results in a rising earnings profile. Since job mobility is in most data sets observable[38], sufficient ground exists for testing whether there could be alternatives to firm-specific experience (tenure). Instead, one could use the overall

[38] In the BHPS apart from identifying if there has been a job termination, information is also provided for the reason of this termination.

employment experience or the industry specific human capital (for instance Parent, 2000). Moreover, some studies have used age minus the years of schooling as a proxy for the employee's experience. The validity of this approach should be based on the assumption that there is no delay in entering into employment when finishing education. This can be very close to reality for some countries like Britain where the activity rate for the first month after leaving continuous education is 95.2 %, Eurostat (2000)[39]. Additionally, an employee should not have a serious disruption in his/her working life as this could significantly have an impact on his subsequent earnings evolution. Staying idle in employment terms for a relative long period can be expected to have a negative impact on earnings for many reasons since the employee stays significantly behind (in relation to his former colleagues) in the process of acquiring firm-specific training.

The empirical research that followed Mincer's (1974) work did not significantly challenge the quadratic perception but was primarily focused on the factors that could potentially have an impact on the slope of the earnings curve. A well cited exception is the frequently cited work by Murphy and Welch (1990). They argued that the quadratic form would understate early-career earnings growth and overstate mid-career growth. For this reason they proposed cubic or quartic alternatives that fitted their data better. They also claimed that squared experience would imply a constant decrease of wage growth over time, which was inconsistent with their analysis and the dataset they used. However this may not be a result that can be generalised in all circumstances. Card (1999), using the current population surveys (CPS), plots actual earnings means corresponding to different age groups (ranging from 16 to 66 years old) along with an estimated curve that results from a Mincerian type equation. He finds that age-earnings profiles for US men and women are reasonably approximated by a variant of the standard human capital earnings function. In addition he argues that had a cubic specification been used instead, it would have understated the earnings for young workers, belonging to specific educational groups. The Mincerian equation (or variants of it) has been universally

[39] Evidence is based on the Labour Force Survey that was conducted in 2000 and can be found on Eurostat's web site : ec.europa.eu/**eurostat**

accepted and is considered a useful analytical tool to depict the intertemporal earnings path. One important aspect is the selection of the explanatory variables and the way these variables are correlated with wages. Potential explanatory variables apart from tenure and overall working experience (that account for firm-specific capital and general capital respectively) could involve demographic/individual, educational and firm characteristics.

The issue of earning profiles can not be considered to be static. The business cycle can definitely have an impact on earnings growth depending on whether the firm would prefer to make young employees or senior employees redundant. Freeman (1979), for instance, explains how the demographic boom in the post Second World War America affected earnings profiles. Essentially, this is a matter of labour supply. As more and more young employees compete for employment, entry level salaries would be suppressed. To the extent that a firm can substitute young employees for more expensive older workers, the earnings profile should be expected to become flatter. But perfect substitutability would be a rather extreme assumption due to the accumulated experience and firm-specific training of senior employees. And similarly, not all firms are exposed to the same level o macroeconomic vulnerability. Consequently firms that do not usually have to adjust to demand conditions are expected to have a more stable age structure.

It is clear that what plays an important role in determining the shape of the earning profiles is profit maximizing decisions that could potentially favour one cohort of employees against another, with profound effects on the experience-earnings profile. But the discussion so far abstracts from institutional explanations as well as reasons to do with the choice of some employees to join firms that offer a payment directly related to their performance. A specific-task job, paid upon completion of the task is an example. As far as institutions are concerned, few things about unions have been mentioned previously. Most of the existing literature focuses exclusively on how unions affect the earnings profiles in the private sector. For example, Booth and Frank (1996), using the BHPS, find no differences in the earning profiles between workers who are covered by a trade union and those who are not. According to their study, a noticeable difference

appears when the union negotiates and states clearly its demands. To be more specific, when explicit seniority scales exist, then earning profiles become steeper, which could be evidence that unions tend to benefit senior rather than younger workers. This result tends to support the theoretical explanation of discriminating monopoly and challenges the so called "right to manage" model. In earlier work, though, Freeman and Medoff (1984) concluded that unions lead to a flatter wage profile. Moreover, an important aspect that may have been omitted from the analysis is the non-pecuniary aspects of a job that unions negotiate on behalf of their members, and this can be biased in favour of senior workers, leading to an even steeper profile

One other aspect that needs to attract some attention in the earnings profiles discussion is the relation between productivity, seniority and wages. The way that the marginal productivity of labour for an employee changes over time is not clear, despite the substantial empirical and theoretical literature that has explicitly tried to shed light on this matter. And it has not just been a strictly economic issue, since psychologists have conducted numerous experiments trying to understand whether productivity declines as a result of physical fatigue, a psychological effect, or both. In relation to the former, we can refer the reader to a fairly recent study by Deary et al (2000) who found that individuals (regardless of their ability) are subject to the same age-induced changes in cognitive functioning. Further, Schwartzman et al. (1987), found that verbal abilities remain virtually unchanged, while reasoning and speed abilities decline with age. In addition to these findings, the psychological factor should not be underestimated. Increased tenure in the firm can induce psychological exhaustion especially in the case of routinely repeated tasks. Our results in the previous section also revealed that whoever changes job, either within or between firms, enjoys increased job satisfaction, even keeping the important aspects of the job constant (wage, job security).

In general, the idea of diminishing productivity which mentioned above if compared with the quadratic function of earnings reveals that the well known maximization principle (at least in a competitive framework) which equates the marginal

productivity of an employee with his wage need not necessarily hold at a particular moment of time. In fact, an employee at the beginning of his/her career is paid below his marginal productivity while at later stages the spot wage exceeds the value of his/her marginal product. However, in a discounted life-time setting, employers equate the present expected value of a worker's compensation to the present expected value of his/her productivity. From a theoretical point of view, Becker and Stigler (1974) and Lazear (1981) highlight agency aspects of an employment relationship that leads to the mismatch between productivity and earnings: in firms where performance monitoring is not adequate and thus employees have incentives to cheat, a steep earnings profile would increase the cost of shirking and consequently introduce a good reason why employees should think twice before adopting adverse behaviour. This reasoning is supported by Lazear and Moore (1984) who report that earning profiles are flatter for self employed workers, compared to those who receive their compensation from an employer. Also, in a recent UK survey, Brown and Sessions (2006) using three separate datasets find significant evidence supporting the idea that potential agency costs is a primary explaining factor for the steepness of the earning-experience curve. Their estimation shows that earning profiles for employees who are in any kind of performance related payment (PRP) scheme lies between the profiles for "regular" payment employees and the self-employed. In other words, employees in PRP would be less keen in reducing their performance since such action would have a clear impact on their earnings. This impact of course is, by definition, 100% direct in the case of self employed. The agency theory has already been mentioned in Chapter 2 with a particular emphasis on the work of Kahn and Lang (1992) as a potential explanatory factor for hour constraints. Intuitively, when older workers receive earnings in excess of their marginal products, they are likely to be under-employed and desire to work more hours. Yet, our previous findings indicate the opposite. Older workers, at least in the UK, tend to be over-employed which is an indication that older workers are paid less than their marginal productivity. Empirical findings by Kahn and Lang (1992) also support this view.

Although the shape of the earnings profile does not attract much controversy in the literature and is almost universally accepted, what seems to have an unclear pattern (mainly from a theoretical point of view) is the intertemporal difference between earnings and productivity. This ambiguity though is not restrictive for the purpose of our analysis, since what lies in the epicentre of our attention is the relationship between seniority and earnings, in the public and private sector. It also becomes clear that certain aspects of an employment relationship can not lead a priori to a steeper or a flatter earnings profile. It is rather a matter of the extent at which these characteristics (for e.g. unionism, security, agency problems, payment schemes) can be found in the sectors under examination and whether they interact with various individual or firm observable and unobservable characteristics.

The stability of employment relations has also been offered as a reason that can potentially affect the earning profiles. In countries where there is a strong employment culture supporting long tenures, earning profiles should be steeper. This argument was offered by Hashimoto and Raisian (1985) who compared the US and the Japan labour market. Their results strongly supported the firm-specific human capital hypothesis since for Japan, an additional year of tenure was found to increase earnings more than an additional year of general experience did. The opposite was the case for the US. Clark and Ogawa (1992) extended Hashimoto and Raisian's work, trying to find if this pattern of earning profiles remained stable in subsequent years. The logic of their analysis is very similar to the previously mentioned work by Freeman (1979) since they highlighted specifically the demographic factors and whether young and old employees are perfect substitutes in the production function. Although they confirmed the results by Hashimoto and Raisian (1985) using 1981 data, they found substantial declines in the value of an extra year of job tenure. As they explain, increases in the age of mandatory retirement may have led to a flatter earnings profile. We will show later in this chapter that our UK evidence show much more stable employment relations in the public sector, compared with the average tenure in the private one. In the same token, separations are less frequent in the public sector and also, the percentage of people who are actively looking for a new

job significantly smaller. These descriptive findings could lead to potential explanations about the shape of the earnings profile curve, consistent with the logic of the above mentioned studies.

In conclusion, the arguments as well as the empirical findings can be summarised in the following points:

1) Rising earnings profiles can be the result of human capital accumulation. The exact nature of this accumulation (firm-specific, industry-specific or general) can be different for individuals and depends not only on personal components but also on firms' characteristics. Experience and training in a firm can also be desirable for a different firm operating in the same industry, provided of course that some requirements are met (for example similarities in production techniques).
2) Rising earnings profiles can serve as a discipline device, preventing workers from shirking. When an employee's output is not instantaneously verifiable (implying an incentive to shirk), the employer places his future wealth at risk as in case of being caught, he/she will loose future earnings that are in excess of his/her productivity.
3) If we assume an employee's output that is not directly verifiably, differences in the earnings curve slope between two workers in different firms (or sectors) may reflect a tendency to substitute higher future earnings with other job parameters that might be more important for an employee, like job security, promotion opportunities and so forth.
4) Selection into a lengthy employment relationship could be considered dependent on the wage growth. Generally, the more rapidly the wage grows, the more likely that the employee will not change job. At the same time, employees with higher ability or enthusiasm are also well possible to have higher experience and seniority. Consequently the two separate problems that arise come of the form of sample selection and potential endogeneity.

In this chapter we primarily try to explore if there is a significant (on average) difference in the earnings profiles between the two sectors of employment, the public sector and the private. Further, by analysing the conceptual and operational differences between public and private we suggest that some employees are not sorted into either sector in a random manner. It is rather some distinct characteristics of the public or private sector are more or less appealing to certain categories of the population. Since we estimate wage equation, these characteristics will be related to the earnings profile as a potential trade-off. An example of such a trade-off could be non-pecuniary employment aspects and the rate of wage increases. Assuming that some employees are more interested in non-pecuniary aspects than others and that public sector offers them, then these employees would be expected to seek employment in the public sector. Our analysis is based on the assumption that if someone wants to find a public sector job there are not any supply-demand restrictions for doing so.

From an econometric point of view we need to control for all those factors that can have an impact on the slope of earnings profiles in order to highlight the above argument and also to account for the potential self-selection into the public sector. The scope is to find a curve that could on average describe the pattern of earnings dynamics in the private and public sector and explain the possible reasons for any observed differences.

4.3 Public and Private Sector

In this section we provide justification for our choice to distinguish between the two sectors in the earnings profile study. The difference between public and private is primarily conceptual. It refers to the logic that a public agency needs to accomplish tasks that are not necessarily placed within a market framework. Such tasks may include the provision of education, health, administration, social security and so forth. These areas of public sector interest are in line with the idea of promoting social efficiency and thus can be totally different from the profit maximizing goals of a private firm. Ben and Gaus

(1983) suggested that public and private vary along at least three dimensions: (a) interest, (b) access and (c) agency. Interest refers to distinguishing whether gains or losses are communal or restricted to individuals. For example, the non excludability property of public goods ensures that any benefits from the provision of these goods will not be restricted within a limited group of individuals. Access is linked to the openness of facilities, resources or information. Agency, according to the study above, refers to whether a person or an organization is acting as an individual or as an agent for the community as a whole.

Apart from the three criteria mentioned above, someone could provide a public sector definition on an ownership/funding basis. Following this logic, public organizations are those owned by government, whether they are governmental offices (e.g. ministries), schools, hospitals or manufacturing firms. In the same token, public ownership requires public funding, meaning that the source of funding for public sector activities will be either the national budget or the (compulsory) offers of the local community members like the council tax. Notice here that this definition does not necessarily imply that public organisations are more subjected to heavily institutional controls of government as opposed to market oriented firms. In fact, privately owned institutions can also be heavily affected by governmental regulation. Public administration literature has been thoroughly examined the border lines between public and private, focusing on the various proposed definitions and explaining the fundamental differences[40]. However, the economic implications of this conceptual separation have been analyzed by economists, for instance, wage differentials between the two sectors (Katz and Krueger 1991) and the sector choice probability (Black, 1985) . Ehrenberg and Schwartz (1986) also attempted to decode the special attributes of the public sector. This study, although US oriented, provides a brief historical overview of the evolution of the public sector in the US and the various institutions that govern the issues related to how

[40] For a comprehensive survey see Perry and Rainey (1988), "The Public-Private Distinction in Organization Theory : A Critique and Research Strategy" in the Academy of Management Review.

wages are formed. They project public sector issues under the light of unionism and political insights.

As far as unionism is concerned, there are several thoughts which turn our attention not only to the question of whether there is an active union at the workplace but also to the way these institutions affect the negotiation process over a range of issues (not just wage bargaining), the link between unionism and productivity and so forth. Although it could be difficult to quantify these effects, it must also be expected that the quality of the union plays a role not only in determining wage differentials between the sectors of economy, but also in the shape of the wage profiles. In this context, the word "quality" is crucial. It simply implies that from an econometrics point of view, adding a dichotomous variable for whether a union exists in the workplace, although probably sufficient in explaining some within-firm wage variation, would not help in identifying effects between sectors. Public sector unions can be different in their objectives and in the means of achieving these, than private sector unions. Freeman (1986), for example, provides an exhaustive survey on how public sector unionism evolved in the US. He emphasises particularly the broad consensus that the effect of public sector unions on wages is not as profound as it for the private sector and mentions that the union power in a public setting is *de facto* limited as in a case of a strike, governments continue to receive tax money whereas the receipts of employees may dry up. This view reflects structural differences between the public and the private sectors.

Finally, we should make a distinction between union density and union coverage. Although the percentage of employees who join a trade union may not be high, the outcomes of collective bargaining may be extended even to employees who are not union members. As Blanchflower and Bryson (2004) discuss, this fact consists a fundemendal difference between unionism in the US and the UK. In the UK, many more non-members work in workplaces that are covered by union agreements while in the US more union members are employed in workplaces where unions are not engaged in pay bargaining. According to Hildreth (2000), coverage and membership are less highly correlated in

Britain than in the US because there is less pressure on employees to become members where there is a coverage agreement. In any case, unionism in both UK and US has exhibited similar trends in terms of participation, political support, ability to influence wages and ability to spark industrial actions. (Freeman, 1995).

The political environment under which the public sector operates is also important. The decision-making process (about issues such as the volume of production, quality, allocation of resources e.t.c.) does not always allow for efficiency considerations, but takes into account the political situation and objectives that are not necessarily market oriented. Although this kind of environment can still be analyzed in terms of labour theory that identifies principals and agents, the interdependence between these two parts is not always clear. It must be expected that policy makers' utility is maximized only in the case of re-election and there is no other outcome that would be acceptable by them. This rule could allow for deviations from optimum decisions and mutual agreements between voters and politicians that do not necessarily promote political transparency. For instance, Borjas (1982) develops a model that takes into account the vote-maximizing bureaucrat in order to explain wage differentials between the public sector and the private one.

These considerations can have implications on how the public sector operates. Either way, although the performance of a private firm is being considered by its owners more often on the basis of maximizing profits, the nature and the level at which this takes place in a public firm (or organization) is not exactly clear. This assumption by it-self may have several applications that alter fundamentally the working conditions between the public and private sector in many aspects. For example we mention the issues of job security, working hours, monitoring mechanism and earning profiles.

The differentiation in the main objectives between the private and the public sector may not necessarily be stressed out implicitly. For instance, it is nowhere written that public firms or organizations are not interested in profits. Especially in the case

where those firms are listed in the stock market and shareholders are expecting behaviour consistent with the maximisation of their shares value. Consequently, it is essential to make a distinction between firms of the "narrow" (for example ministries) and "wide" public sector (potentially some utility firms)[41]. This categorization of economic activities within the public sector, although methodologically useful, is convenient for an empirical consideration only to the extent that the available data allow for this. In most of the cases we have to assume a high degree of homogeneity between public firms or organization, without this being really accurate. Even so, one can expect that at least some aspects of the employment conditions are fairly similar and thus some broad results can be derived. This again results from the assumption that public organizations often have missions with broader scope and more profound impact than is typically found in the private sector.

The view that public sector is charged with promoting general welfare can have motivational implications as well. These implications stem from the fact that the participatory basis for public sector can be more idealistic than it is for an occupation in the private sector. In addition the outcome of the effort that an employee is exercising at the work place can have a direct consequence on an individual's welfare and in extension to social welfare. For example, if a private sector employee undertakes the risk to shirk, the consequences of this action (provided he is not caught) are detected on the less effort he provides and consequently on the profits of the entrepreneur. On the other hand an NHS[42] surgeon can not provide less effort than the best she can offer since shirking is possible to put the health of her patient in danger. It is clear that in this case, any incentive scheme (a bonus scheme for instance) would not stimulate a better performance since the maximum possible performance would have anyway been provided for idealistic and ethical reasons. For exactly these reasons performance monitoring and a performance related payment may be excessive in the public sector. Burgess and Ratto (2003) mention the issue of introducing in the UK (for the first time in history) a national performance-related pay scheme for teachers. Under this scheme, teachers who have

[41] A different base for differentiation within the public sector could be the federal state and local governments for the US or the local councils for the United Kingdom

[42] The National Health System (NHS) is the publicly funded health care system of England.

reached the maximum payment level are eligible to apply to pass a performance threshold. Their performance is assessed against various specific categories and if successful they receive an annual bonus of £2000 which they will receive until the end of their career, without needing to reapply. This scheme received a cold reception, particularly from teaching unions, for the same reasons we mentioned above: the social dimension of the teaching profession does not require financial incentives to induce effort.

The composition of the public workforce is expected to reflect the nature of work in the public sector, attracting employees who desire greater opportunities to fulfil higher order needs and altruistic motives. If this is indeed the case, those who work in the public sector emphasize more on the work they are doing (satisfaction with the work it self) while private sector employees place the highest value on good wages.

A comparison between public and private sector would then reveal differences in the job values that employees place on certain job aspects. It is reasonable to assume that job values changed over time, given changes in economic, social, technological and political conditions. In the public administration literature, Karl and Sutton (1998), focusing on the US, find that there is no difference between public and private sector employees in the importance placed on job security. A study by Rainey (1982) (again on US) was also along these lines. On the contrary, Crewson (1997) supported that public-sector employees generally value job security less than private sector employees do. Finally, an econometric estimation by Bellante and Link (1981) using the PSID concluded that labor-force participants correctly perceive that less risk is attached to public sector employment.

Table 4.1 provides evidence on the most important aspect of the job from the latest available wave (2004) of the British Household Panel Survey (BHPS). It is in fact the first time such a question is included in the questionnaire. In particular, there is a statistically significant difference between the two sectors in the percentage of workers

who report that total pay is the most important aspect of the job. In the private sector 28 percent of employees reported that the total remuneration is the most important aspect of their job. The relevant figure for the private sector is 15.95 percent.

What seems to be more important for public sector workers is the actual work it self. The corresponding figure is 38.07 percent which exceeds the private sector figure by almost 15 percentage points. It seems that a substantial fraction of public sector workers are attracted into public employment by the actual nature of their employment. Some examples could be employers in the police force/fire brigade, military personnel,

Table (4.1)

Most Important aspect of a job, BHPS 2004, Column %

Job aspect	*Private Sector*	*Public Sector*	*Total*
Promotion prospects	3.04 (144)	1.81 (46)	2.61 (190)
Total pay	27.73 (1312)	15.95 (406)	23.61 (1718)
Good relations with Manager	9.72 (460)	8.37 (213)	9.25 (673)
Job security	23.37 (1106)	21.14 (538)	22.59 (1644)
Using own initiative	7.52 (356)	8.68 (221)	7.93 (577)
The work itself	22.53 (1066)	38.07 (969)	27.96 (2035)
The hours of work	4.59 (217)	4.28 (109)	4.48 (326)
Something else	1.5 (71)	1.69 (43)	1.57 (114)
Total	100 (4732)	100 (2545)	100 (7277)

Notes : 1) Raw Numbers in Parenthesis

(2) Chi Squared test of independence show that the differences are significant at the conventional 5% level

teachers, nurses and so forth.

In terms of the rest of job aspects, we notice the similarity between public and private sector workers in the percentage of those who place job security as the more important aspect of a job. The relevant figures are 23.37% for the private and 21.14% for the public sector. However, what is not clear is whether job security is related to

institutional or to demand side factors. In other words, if by job security employees perceive either the inability of their employers to make them redundant (for example due to the presence of a strong union) or the ability of them selves to find a new working place. This ability depends both on employee's own characteristics and on the demand for employment from the employers' side. Both factors (institutional and demand side) has unavoidably a dynamic context though demand is expected to be less volatile that institutions. In this sense, public sector employment must be thought to be less risky since market conditions are less likely to affect the level of operations in the public sector or the legislatory basis of the public sector employment.

What has been stressed out so far is that the labels "public" and "private" do not mean anything by themselves. What really matters is the associated employment characteristics that are discreet in nature and visible to employees. When an individual decides to join either sector, it must be assumed that the choice is based on his/her preferences towards the special characteristics of this job[43]. If for example the broad feeling in the labour force is that the public sector offers more stable jobs than the private sector, risk behaviour could be a primary suspect for anticipating how likely it would be for an employee to accept a job in this sector. Bellante and Link (1981), using US data, estimate the probability of choosing a public sector job in relation to the level of risk averseness. Their results show that public sector jobs were indeed chosen by the less risky employees. Dixit (2002, p. 716) also argues, using incentive theory, that less risk averse, high ability employees will prefer a private sector employment where marginal incentives are more powerful. The term "marginal incentive" refers to the case where the payment is not just a fixed amount but also depends on the amount of output produced. Such a scheme can take the simple form of $y(x) = \beta + \mu\chi$ where β is the fixed compensation and μ denotes the marginal incentive. In this respect, the employer must choose the parameters of the problem in order to satisfy that worker will not decide to quit (participation constraint) and that he/she will exert the effort that the employer desires (incentive constraint). Assuming that α denotes the employer's effort, the reason for an incentive scheme is that the output χ can precisely indicate the employee's effort

[43] We are also abstracting from labour demand constraints, so for each worker the difficulty of joining either sector is the same and consequently only preferences matter. This assumption may not be very realistic in labour markets where the supply for a sector exceeds the relevant demand.

since stochastic parameters can penetrate into the production process. Assuming that output χ equals α plus a normally distributed error with variance v, the employee's cost of effort is quadratic, $c(a) = \frac{1}{2}ca^2$ and that both the employer and the worker are risk averse with R showing the level of risk aversion for the employer and r the level of risk aversion for the worker, it can be shown[44] that the marginal coefficient μ is $\frac{1+Rcv}{1+(r+R)cv}$. Clearly, if the relationship between effort and output can be determined in all circumstances (v=0) then μ is equal to 1 and the payment is just a fixed amount. The same also applies if both the worker and the employer are risk-neutral. But the more risk averse a worker is, the higher μ becomes. Combining this observation with the above mentioned finding by Belante and Link (1981) we must expect that performance related payments and bonus schemes must be much more frequent in the private sector rather than in the public sector. This is indeed verified by our UK dataset as shown later in this chapter.

If earnings profile for the public sector is flatter that the corresponding one for the private sector then one of the possible explanation could be that employees trade off the probability of excessive future earnings that the private sector offers for other job aspects like job security and employment stability that the public sector guarantees. With respect to the latter, Boheim and Taylor (2002) estimate (using the BHPS) that employers in public sector jobs have lower job exit rates than those in the private sector. Support (even stronger) in the same direction is given for South Italy by Pagani (2003). For private sector employees, if we accept that their jobs are less stable compared to those offered in the public sector, economic theory dictates that this decreased employment stability should be compensated. Consistent with the hedonic wage approach, this compensation can take various forms such as increased payment in the current period or the probability of having an increased level of income in a future time.

Finally, different future discount rates could also influence sector selection. To make this more intuitive, suppose that two employees, A and B possess the same

[44] See Varian (1992, p. 453-454).

characteristics in terms of education and other observable parameters like tenure, age, experience and so forth but differ in the way they discount future. Employee A discounts future at a higher rate than B, implying that A has a stronger preference for current consumption. Even if the discounted present value of the income streams in the two sectors is the same, employer A will choose this employment sector that offers higher earnings at the present time. This choice can be motivated by a differentiation in the slopes of earnings profiles between the two sectors. If public sector creates a smoother earnings profile (but payment starts from a higher level) then an employee who is in the need for present earnings will have an increased likelihood to choose a public sector job, to the extent of course that this choice can be easily implemented.

The public sector comprises a variety of institutions of differing complexity and operational nature. In principle, the production of the public sector involves (apart from the necessary administrative tasks like ministries, tax collection e.t.c.) those goods that can have the characteristics of "public goods" namely non-rivalry and non-excludability. Because of the nature of the goods being produced in the public sector of the economy, public sector employees are positioned to derive a certain amount of utility by having the belief that working for a public firm is consistent with an idealistic or ethical purpose. This view contradicts the general theory of incentives which assumes that an employee derives satisfaction (utility) from the wage that the employee offers and disutility from the effort he/she is exerting on the job. It is rather more consistent with the notion of gift exchange (Akerlof, 1982).

4.4 Data Description

Our data set is the British Houshold Panel Data (BHPS). BHPS is an annually collected (usually every September) representative UK sample that tries to keep track of the same individuals every year. Although a certain degree of attrition is unavoidable, this is kept at lower levels than similar panels such as the European Community

Household Panel[45] (ECHP) or the German Socio-Economic Panel. If the cause of attrition is random, no problems should arise in terms of the unbiasness of the estimated coefficients. On the other hand, if there is a selective omission of certain categories of the population whose characteristics are of interest then the econometric estimation could lead to biased results. Greene (2008) discusses three levels of data missing. The first one arises when the missing values have no impact on the other non-missing values. This form of data missing (attrition) has been named by Rubin (1976) as the case where *data are missing completely at random*. The polar differentiation from this case is when the missing data *are not missing at random*. This form of attrition is closely related to the issue of selectivity that is discussed later in this chapter. For example, if the research question is to find the frequency at which university students make use of the university catering facilities, a survey that is being conducted in these catering facilities (rather than in any point on campus in random) would result in a biased estimation.

Our interest in this chapter is placed on the selection of the employment sector in relation to the earnings-profile that each sector offers and consequently there is no *a priori* reason to believe that it had been more difficult to trace public sector employees over time than the private sector ones[46]. This logical argument can be also enhanced by two factors: 1) The BHP Survey is conducted at a household and not at a working place level. 2) The procedure of selecting households for participating in the survey is following a random process which is based on postcodes.[47]

4.5 Public Sector Choice

[45] Nicoletti and Peracchi (2002) analyze the attrition process in the ECHP. It is worth mentioning that very high subsequent participation rates in Italy and Greece are due to the mandatory nature of the survey in these countries.
[46] We even used a weighted regression using the BHPS provided longitudinal weights to account for non-random attrition without significant results alteration.
[47] For a more detailed technical report on BHPS see Taylor (ed.) et. al. (2007)

This section aims to shed light on the particular characteristics of the public/private sector that attract employees into the one or the other. Certain issues have been mentioned before, like total payment, job security, working hours and so forth. Specific demographic groups could be keener in joining either sector if some of the employment characteristics match the desired preferences. For instance, some women could be more willing to be in a public sector job if this kind of employment guarantees a less stressful environment, more job security or better working hours.

The econometric specification is a binary probit that is using the British Household Panel Survey in a cross sectional as well as a random effects manner[48]. In particular, the econometric form of the sector selection takes the form:

$$Sec_{it} = a + \boldsymbol{\beta}^{T}\mathbf{X_{it}} + \varepsilon_{it}$$

The left hand side of the equation is a binary variable indicating whether the worker is in the public or the private sector. The vector **X** contains a list of all the relevant variables that could potentially affect the choice into a specific sector and **β** contains the relevant coefficients. In this analysis, the results correspond to the choice of public sector employment since the value "1" of the Variable "Sec" is assigned to the choice of public sector. Among the others, we control for all the usual suspects, namely age (in 4 categories), sex , education, marriage, having children and having more than 2 children, performance payment , working hours constraints, unionism and promotion opportunities. In an augmented specification, we use subjective information on what the respondents perceive as the most important aspect of their employment. The reason for doing this is to examine (depending on the accuracy that data provides) if subjective preferences towards specific job aspects have any impact on the employment choice between working in the private or public sector.

[48] A fixed effect probit approach would require the existence of a sufficient statistic allowing the fixed effects to be conditioned out of the likelihood. To the best of our knowledge, such statistic does not exist. Even if there was, most of the variables would have dropped out since they are time invariant.

In this point it would be useful to make a distinction between the most desirable aspect of a job and the subjectively reported level of job satisfaction we used in the previous chapter. The former does not necessarily imply the latter. It simply states the subjective level of importance each individual is placing on certain job attributes. In other words, if a respondent assigns the maximum possible value to the importance of job security, we can not be certain if the actual job security in his/her working place is high or low. But if job security is low (in subjective terms) and at he same time the worker considers it as an important aspect of a job, we can assume that this individual would be willing to move towards a working place that is more close to his/her desired profile. The extent to which this event will occur depends on a variety of personal, economical and institutional factors.

From the BHPS, we select four main answers (out of the eight shown in table 1) that are given as options to the question "*which of the following you consider as the most important aspect of your employment*". These are the actual pay, job security, the actual work it self and the working hours. It must be mentioned that this question was included in the last BHPS wave (2004), a fact that is profoundly limiting our econometric arsenal since no within groups variation can be used to account for the unobserved elements that are well possible to have an influence in the sector selection. Consequently a researcher must wait until more information is available from the subsequent BHPS waves [49]. We estimate three sector selection models. Model (1) is utilizing the whole available time range (1991 - 2004) but not the four above mentioned variables that were used in an attempt to depict a more precise picture of the nature of sector selection. Alternative variables that can alternatively infer a sense of selectivity can be the performance payment, whether salary includes bonuses and whether the employer works more hours than he/she ideally desires. Specification (2) is solely focused on the 14th wave (2004), including the subjectively measured variables of the most important aspect of a job.

[49] The BHPS sample will be continuing within the UK Household Longitudinal Study (UKHLS), a new panel designed by ISER, University of Essex and funded by the ESRC. The UKHLS will provide the next generation of panel data for the UK and will be the largest household panel study in the world. (BHPS Update, spring 2007, ISER, University of Essex)

Finally, for reasons of comparison, specification (3) is a random effects (RE) version of (1).

4.5.1 Binomial Results

Table 4.2 presents the results from the pooled standard binomial (without RE) regression, model (1), the cross sectional specification for year 2004, model (2), and the RE results, model (3). Apart from these estimates and the relevant statistical information, table 4.2 also includes a column that shows the sub-sample public employment rates for various key groups within the population. These rates denote the proportion of the respondents with a particular attribute who have been classified in our data sample as public sector employees. For instance, the second row in the sub-sample rate column shows that 41.45% of all women in the BHPS sample work in the public sector. In contrast, only 21.32% of all men work in the public sector. Consequently, what this sub-sample shows is the (unconditional) incidence of public sector employment and not the public sector employment structure which would refer in our study to the relative participation of each gender in the public sector. If this was the case, the two gender (percentage) contribution should add to a hundred.

4.5.2 Public Sector Employment Incidence

In general terms, the picture of our reference employee for the probit estimation shows a single male, less than 25 years old who has no formal educational qualifications, is unconstrained in the hours he works, does not receive any kind of performance payment, he is not a union member and leaves in London without being married or having children. Consequently, the estimated coefficients show the relationship between the probability of being a public sector worker and a particular attribute relative to the reference category. A positive coefficient indicates that an individual with that characteristic is *ceteris paribus* more likely to be in the public sector than individuals

without it. Moreover, the larger the estimated coefficient on a particular characteristic the greater is its contribution to the incidence of public sector employment.

From all three specifications (models), it is clear that being a woman affects positively and significantly the probability of public sector selection. This comes to no surprise as from all women population, a 41.45% is employed in the public sector. The respective figure for men is just 22.32%. This observation could partially explain some following results concerning the relative impact of other factors to the incidence of employment in the public sector.

When discussing the relationship between age and public sector employment we can certainly not overlook the fact that with reference to the group of employees between 18 and 25 years old, senior employees are more likely to be employed in the public sector. In addition, the magnitude of the coefficient becomes even larger as we move to the age groups that include older employees. It seems that public sector employment is more frequent among senior workers but from the binary choice model we use we can not infer the exact reasons for which a significant proportion of senior workers ends up in public employment.

In relation to education, it is strongly evident from our results that higher education (for example a master's degree or a doctorate) increases the probability that someone will be employed in the public sector. In this respect, the positive and highly significant probit coefficient is supported by the sub-sample public employment rate which is 60.63%. Again, it is difficult to decode the reasons behind this result and several explanations can be offered. For instance it may be the case that some public sector working places systematically create more jobs that require very high qualifications. For example, PhD holders are very likely to be employed at a university (public employment, at least in the UK) since a PhD degree is in most of the cases a vital requirement for such a job. Another explanation could be related to the special characteristics that a public employment at this high educational level offers such as a higher wage, desirable non-pecuniary aspects, faster hierarchical evolution and so forth. The same logic applies to

graduates. A university degree[50] significantly increases the public employment probability.

As far as non-university education is concerned, having *a levels* and *o levels* qualifications (implying finishing education at the age of 18 or less and not attending further education) is also associated with increased and significant probability of being a public sector employee, again taking as a reference category a respondent with no educational qualifications. However, a striking difference (apart from the magnitude of the estimated coefficient) between these two educational categories and the higher qualifications mentioned above is the corresponding sub-sample public employment rate. From all employed individuals who report either having *a levels* or *o levels* as the maximum educ. qualification, only a 24.75% is holding a public employment position. These educational levels can be very much associated with manual skilled and non-skilled work which is more likely to be found in the private sector, in relative jobs. On the contrary, the more administrative nature of the public sector diminishes the chances of having employment of manual type to a great extent. To verify this we examine three occupational categories that are by definition not very demanding in terms of the educational qualifications: skilled occupations (e.g. a plumber), sales and customer service occupations and process, plant and machine operatives. Evidence from the BHPS indicates that these three categories combined account for a 35% of the total private sector employment. The corresponding figure for the public sector is just 4.26%. Consequently, taking these figures into consideration, the fact that the estimated coefficient on *a levels* and *o levels* are positive and significant might look at first sight puzzling. But what we should emphasize at is that the coefficients have been estimated with reference to having no education at all. If the reference category had been the high education instead, the coefficients on *a levels* and *o levels* would have been negative.

[50] Unfortunately a more detailed breakdown of university degrees between first degrees, good degrees (like 2-1's) and average ones is not feasible within the BHPS.

As expected, teaching and nursing qualifications are strongly associated with public sector employment. The corresponding sub-sample rate is the highest among all the variables we consider and reaches almost 70%. At the same time, very low education as implied by a CSE qualification[51] is not a statistically significant contributing factor for public sector employment. In other words, for public employment, having even some qualifications is like having no qualifications at all.

Although marital status does not seem to be a contributing factor for the sector choice, the contrary is the case for having children. This fact (significant even at the 1% level but not having high magnitude) may be potentially reflecting job security considerations if there is a broad consensus among the members of a particular labor market that public sector employment is in fact providing more secured employment relations. At the same time, a more stable employment environment may be coming from factors affecting the supply side, the demand side or both. For instance, an institutional environment (possibly highly regulated) that prevents the public employer from making an employee redundant (in case of a low business cycle for example) is without question a source of employment stability. Also, such a working place is attractive for the employee who is less risk averse and is willing to sacrifice other job aspects for enjoying enhanced job security. The indication we have from the BHPS is that the average tenure for a private sector worker is 5.8 years while for a public sector employee the relevant figure is 6.75 years, with the difference being statistically significant.

In specification (2) where subjective variables are used to measure the most important aspect of a job, reporting job security as the most important aspect of a job is a significant parameter for being in a private sector job. However, this result may indicate just a desire and can not be necessarily perceived as an indication for lack of job security in the public sector. On the other hand, as it is indicated in column (2), reporting payment as the most important aspect of a job increases the possibilities of being in the private

[51] In this study we consider the BHPS classification of CSE 2-5 (Certificate of Secondary Education) as being inferior to GCE (General Certificate of Education) o levels.

sector with the contrary being true for the importance of the actual work. In addition, in specification (1) some proxy variables have been used to account for the fact that some employees might sort them selves into a particular sector for pecuniary reasons. These variables are capturing the possibility of a bonus payment or profit sharing scheme and the incidence of performance payment. They possess a negative and significant coefficient for the probability of being employed in the public sector. Again, in line with our previous reasoning, this could imply both a desire for a complementary payment scheme which satisfies the desire for increased remuneration. It is also worth mentioning that when then subjective measure about whether payment is the most important aspect of the job enters the specification, (column 2); the variable which refers to the performance pay looses all of its significance.

Finally, being a worker in a unionized working place[52] is, according to our results (in all three specifications), the most contributing factor which affects the selection of public employment. Undoubtedly, this variable is possible to represent a large range of unobserved monetary and non-monetary aspects of a job. At the same time it is also true that it is extremely rare not to find a union in a public sector job. According to our BHPS sample, a union exists in 87% of public sector employment places while the relevant figure for the private sector is around 50%. Nevertheless, there is a high possibility that some workers choose public employment for the particular characteristics that this sector offers if these characteristics are associated with the existence of a working place union, for example better working conditions. The same logic is possible to apply to women's selection of public sector employment. Being a female is highly raising the probability of being a public employee which again raises the suspicion that selection into this sector is not dictated by a totally random process. To conclude, the probit estimation (in all 3 versions) also includes year as well as regional dummies. Although the resulting coefficients for the former do not indicate any intertemporal influence in the sector selection, the regional dummies turn to be statistically significant. This inclusion is

[52] The reason for selecting the existence of union in the working place (instead of just whether the worker is a member of union or not) is to account for cases where an employee is covered even if he/she is not a union member.

related to the fact that a large fraction of the core public sector employment (central government) is located in the capital (London). On the other hand, there could be certain governmental attempts to displace some parts of the public employment from areas where unemployment is low and move them into regions where the private sector's contribution is diminishing (Henley and Thomas, 2001).

4.6 Earnings Profiles Estimation

After having estimated the factors that have a statistically significant impact on the choice of employment sector, we estimate a standard Mincerian equation of the form:

$$Ln\ w_{it} = \boldsymbol{\beta}^T \boldsymbol{X}_{it} + \alpha E_{it} + bE^2_{it} + \varepsilon_{it}$$

Where w_{it} represents the monthly wage[53], $\mathbf{X}_{it}$ is a vector of personal characteristics and workplace characteristics including education, occupational status and industry dummies and E_{it} symbolises the labour force experience that each person possesses. As we have explained before, different studies use different meanings of the term "experience". In this work, following Brown and Sessions (2006) we experiment with *age*, respondent's age less his/her age when finished full-time education and job tenure. By using various proxies to account for experience, we may have the possibility to detect the relative importance of specific and general human capital accumulation in the public and the private sector. If, for example, in the private sector we compare earnings profiles when using tenure and age as proxies, we could argue that for this particular sector what matters more in terms of wage promotions is the sector specific capital and not the generally accumulated human capital if the tenure variable produces a more steep profile than the age one. In other words, while in the private sector skills and experience may

[53] Monthly wage has been adjusted for working hours and consequently the results are the same as if we were using hourly data. Although in the BHPS there is a variable indicating whether an employee is compensated on an hourly or a salary basis, information for almost half of employees in unavailable. Additionally, monthly wage is expressed in 1991 terms using the corresponding CPI for each year.

not be directly transferred when an employee moves jobs; in the public sector these skills may be more interchangeable.

An additional note on the earnings specification concerns the way education enters this specification. When the parameter of interest is the way education affects earnings, it is not exactly clear whether people who have high education would have gained approximately the same amount of money had they not achieved the same education. It has been suggested that high ability individuals are those who, at the same time, select higher education. If this is the case, OLS estimates would be upwards biased. Becker (1964) though understated these concerns. After adjusting for ability bias (measured by the IQ level) and taking into consideration the family background (parents with college education) he concluded that education by it self is sufficient in explaining a very significant part of earnings. He also suggested that what employers reward in terms of earnings is not the ability *per se* but the knowledge associated with educational attainment. In this sense, an econometric estimation should not control for measurements of knowledge and skills, otherwise the true effect of educations on earnings would be eliminated[54].

Even if highly educated workers are generally more able[55] than those who do not hold a university degree, it is not really clear if this kind of ability differential is needed by firms. Moreover, if instead of a piece-rate payment regime a fixed payment is in force, wage differentials would be free from any ability differentials. These differentials could then be a result of a signalling effect and in this case OLS estimates would correctly depict the causal effect of education on earnings. Even if OLS estimates are biased due to the endogeneity of education, this problem can be mitigated if there is either a measurement error in the education variables or/and a sample selection bias (in the sense that people with more education are more likely to be employed). As Dearden (1999b)

[54] In Becker (1964, p86, footnote 25)
[55] Again Becker (1964) provides evidence that show that college graduates have on average a higher IQ level (120.5) in comparison to high school graduates (106.8). However a significant ground of criticism exists (beyond the scope of this study) for the suitability of IQ tests to measure ability in relation to earning from employment.

discusses, these biases to a large extent cancel out with the potential ability bias so, overall, OLS provides quite reasonable estimates of the returns to education.

In the Mincer equation, education enters the specification in a linear form. The implication of this approach is that each additional year of schooling has the same effect on earnings. In other words, this means that the effect on earnings from adding two more years of education when you already have 9 is the same as adding two more years of education when you already have 12. But usually, the latter means university education (assuming that school starting age at the age of 6) which is expected to have higher returns on earnings than for example 3 years of education at the age of 15. UK results that support this view (that possessing a university degree yields a significant boost in earnings) can be found in Blundel et al (2000,2005) and Mcintosh (2006)[56]. In other words, studies that simply measure the length of the educational attendance miss out an important qualitative jump when higher education is pursued. In the same sense, a year in addition to university education, normally a master's degree, is also likely to result in a non-linear effect in relation to the earnings someone would get by just having the standard university education. However, the exact magnitude of this impact is likely to be determined mostly by the labour market forces. In any case, the inclusion of dummy variables to account for different educational qualifications can depict non-linearities in any direction and thus can prove more realistic in terms of the impact of each of these educational level on earnings.

In this study we will be using 6 educational dummy variables which account for various levels of education with reference to not having any education at all, obviously apart from the compulsory schooling years dictated by the law. The highest educational category refers to those individuals who hold a higher degree, namely a masters qualification or a PhD. Unfortunately we can not make a distinction between these two degrees which are obviously very different in nature. At the same time, no information is

[56] This study also proposes a method to decompose the effect of education on earnings between an age effect and a cohort effect.

given about the quality of the A levels a respondent holds. A levels exams are taken at the age of 18 by those individuals who remain at school and are the primary root to university education. GCSE (General Certificate of Secondary Education) exams are usually taken at the age of 16 in up to 10 or 11 subjects. They replaced the O level GCE and the CSE in 1986. However, the BHPS coding in terms of the highest achieved qualification continues to use the old terminology. In this case, we consider that an O level qualification corresponds to a GCSE grade between A and C while a CSE qualification is associated with a GCSE grade of D or lower. In our sample (and consequently in our results) the term "Other higher qualifications" refer mainly to non-university technical or professional qualifications like the Higher National Certificate (HNC) and the Higher National Diploma (HND). HNC and HND are both associated with vocational training but differ in length. HNC lasts for a year and is roughly equivalent to first year of university while the duration of HND is two years and corresponds to second year of university.

An additional covariate is a variable that indicates if there has been an annual wage increment. This inclusion aims to account for cases where the employee moves to a negotiated higher payment scale after a year. However, we do not control for promotions since that would drastically reduce our sample size[57] and in any case a promotion is not always associated with a wage increase.

4.6.1 The issue of self selection into a particular sector

A major issue of concern when we want to estimate a causal relationship in economics is selectivity and to be more precise self-selectivity[58]. When individuals sort themselves into categories in a non-random manner it can have serious implications for

[57] From the employment history record of the BHPS we can identify the reason for stopping previous job (including promotions). For all 14 waves, information is available for 20000 individuals in contrast to our full working sample which consists of approximately 96000 individuals.
[58] An excellent exposition of the issue is provided in Manski , 1995, "Identification Problems in the Social Sciences", Harvard University Press, pp 21-50

econometric estimation. The reason is that the error term will not be zero on average and this fact will result in biased estimates. A classic example that clearly illustrates the problem is the estimation of wage elasticities. If a researcher estimates a relationship between wages and hours of work without taking into account that for some members of the labour force hours of work equals zero then the resulting estimation would be upwards biased, since within the sample of workers it is natural to assume that that the average value of the error term is positive. As Killingsworth (1983, p.80) argues, "It would be somewhat surprising if one did not find that tastes for work were higher, on average, in a sample of workers than in the general population".

Likewise, in the previous chapter we mentioned a potential explanation for why women report higher job satisfaction than men: A large percentage of women choose to work only if the working conditions are consistent with their expectations which will imply a higher job satisfaction.

For our study which deals with the earnings profiles in the public and the private sector a similar logic applies. We need to take into consideration that there might be some unobserved parameters that can have an impact on both the dependent variable (the natural logarithm of wage) and the probability of choosing a sector. This notion is consistent with what we mentioned earlier, that a non random selection into either sector can be the result of the preferences of workers towards specific employment characteristics of these sectors.

The case of non random selection can be problematic only in the case where the selection rule has an impact on the dependent variable. If for example the dependent variable is the wage and marital status is one of the explanatory variables, it will not matter if there is an increased likelihood of married people ending up in the sample, as long as there is no relationship between being married and wage. In this case the selection rule can be said to be ignorable (Rubin, 1976). However, in terms of our analysis, selection bias can be a source of biased estimations if employees sort them-

selves into a specific type of employment (sector) based on their preferences towards wage.

The standard procedure to tackle this selection bias problem is to estimate the model, taking into consideration the selection rule. It is mentioned in the literature as the Heckman two-step procedure, due to Heckman (1979). To be more specific, assume that the relationship under examination is given by $w_{ipr} = x_{1i}^{'}\beta_1 + \varepsilon_{1i}$ where $x_{1i}^{'}$ is the vector of characteristics and w_{ipr} is the monthly wage for the ith employee who is working in the private sector. The selection equation is of a simple probit type, having a binary dependent variable indicating private sector employment. It can take the form $h_i = x_{2i}^{'}\beta_2 + \varepsilon_{2i}$ where h_i indicates the sector of employment and $x_{2i}^{'}$ is a vector of variables upon which the sector choice is based. Obviously, we are interested in the conditional expected wage given that a person is working in the public sector or more formally:

$$E[w_{ipr} \mid h_i = private] = x_{1i}^{'}\beta_1 + E[\varepsilon_{1i} \mid h_i = private]$$
$$= x_{1i}^{'}\beta_1 + E[\varepsilon_{1i} \mid \varepsilon_{2i} > -x_{2i}^{'}\beta_2]$$
$$= x_{1i}^{'}\beta_1 + \frac{\sigma_{12}}{\sigma_2^2}\mathrm{E}\left[\varepsilon_{2i} \mid \varepsilon_{2i} > -x_{2i}^{'}\beta_2\right]$$
$$= x_{1i}^{'}\beta_1 + \sigma_{12}\frac{\phi(x_{2i}^{'}\beta_2)}{\Phi(x_{2i}^{'}\beta_2)}$$

where ϕ is the probability function of the normal distribution and Φ is the corresponding cumulative density function. We are naturally interested to examine if the term σ_{12} (the covariance between the two error terms) statistically differs from zero so we calculate the term $\frac{\phi(x_{2i}^{'}\beta_2)}{\Phi(x_{2i}^{'}\beta_2)}$ by using the predicted probability of an individual *i* at time *t* to be employed in the private and public sector. The two-step procedure needs a careful implementation since the choice of dependent variables in both equations is likely to affect the magnitude and the significance of the covariance of the error terms. For reasons of identification, there should be at least one variable affecting the probability of being in

the public sector but not the wages. Even if there is no exclusive restriction, identification can be provided by the non linear functional form of the selection equation, since the wage equation is linear. In any case we are interested in the unobserved parameters that have both an impact on the selection and the earnings profiles so the more relevant dependent variables we use in the selection equation the better since we do not want the mills ratio to pick up any observed parameters. The lambda term should be linked only with unobserved heterogeneity that is jointly distributed, given that this distribution is assumed to be normal. In this respect, our selection equation additionally includes controls for marital status, children, satisfaction with working hours and promotion opportunities. These variables are intuitively separated from the earnings function which is mainly defined in terms of experience and educational characteristics although someone could argue in favour of a plethora of interrelations like education and marital status or promotion opportunities and education. Finally, the variable that indicates unionism is located in both equations but with different meaning. Although in the selection equation being a union member can be related to pecuniary and non-pecuniary reasons, in the earnings function it has only an impact on wages. We believe that this conceptual separation can prove strong for identification purposes.

4.7 Results and policy implications

Table 4.3 presents our empirical findings on the shape of earnings profiles using the above described wage equation and before and after accounting for selection bias. Random effects coefficients for experience and experience square give a clear indication of the significance of the quadratic specification. The hypothesis of the difference slopes in the earnings profiles between the private and the public sector is also verified. Even after using different proxies for experience (age, years in the labour force, job tenure) and

accounting for self-selectivity into the public sector, wage profiles in the private sector are steeper than in the public sector.

What we were also particularly interested in is whether there was a relevant type of non random self selection into public employment motivated by non-pecuniary aspects of employment. As we saw before, the probit equation for the choice of sector yields very significant coefficients, especially for the union variable. We speculate that this variable (among the others) can be a sufficient statistic that summarises a large proportion of the differentiation between the two sectors. In other words, workers may be joining the public sector because of the characteristics of this sector that are largely influenced not just by the existence of the union in the workplace but also by the quality of the union. To grasp this notion better, we compare the results from specification (1) that accounts for sectoral selectivity and is using job tenure as an experience proxy with the results coming exactly from the same specification but without the inclusion of the selectivity terms. Although in the first case the profile that public sector employment generated was less steep that the corresponding profile for the private sector, when non-random selection was taken into account both profiles became much more similar. As it is clear from figures 4.1 and 4.2, public sector profile moved (slightly) upwards and at the same time private sector profile moved (significantly) downwards. To place this differently, when the (implicit) factors that have a simultaneous impact on the choice of the employment sector and the wage are taken into account, differences in the earnings profiles became smoother, resulting in the convergence of the profiles.

When it comes to experience-earnings profiles (as approximated by the years in the labour force), results show that the private sector profile is steeper that the public sector one, even after accounting for self selection (figure 4.3). Of course, this result must be treated with caution as it is based on the assumption that the employee started working immediately after finishing his/her education and also that has never experienced any unemployment spells. Nevertheless, it might be a sign that past experience seems to be appreciated and rewarded in the private sector, providing some evidence in favour of the hypothesis of the importance of a general accumulated human capital. Consequently, this

steep profile may have been generated through a continuous process of competition in the labour market which includes monetary rewards, job changing and promotions[59].

As far as the public sector is concerned, a flatter evolution of wages could result from a public-sector wages plan that is more homogenous in nature and abstracts from bonus payments, profit sharing schemes or overtime compensations. In fact, from our BHPS sample it is evident than only 10% of public employees receive any kind of bonus payment or profit sharing. The relevant figure for the private sector reaches 42%. This public sector homogeneity can also be a result of a more coordinated level of wage negotiations and explicitly set combinations of seniority scales and wage promotions. In fact, around a quarter of public sector employees is under the "pay review" regime, a governmental scheme to replace collective bargaining in certain areas of public sector. A Review Body makes independent recommendations on pay after considering evidence from the relevant parties (typically government, employers and unions), with expectations that the Government will honour those recommendations and the unions will not pursue national industrial action. At present there are six review bodies that cover approximately 26% of the total 5.8 million employed in the UK public sector. The existence of these Review Bodies is evidence that payments in the public sector are more homogenous than they are in the private sector. This fact could be by it self a good explanation about the form of the earnings profile we estimate for the public sector. Although a more detailed breakdown is not possible due to data limitations, we would expect a less dispersed distribution of wages in the public sector than in the private sector. In other words, in the private sector, productivity, qualifications or seniority may be rewarded differently and according to the individualistic speed of capital formation, market conditions, business cycle and so forth. However, private sector payments may abstract from these considerations since review bodies propose an annual increment that would apply to most employees in the certain public areas, abstracting from human capital (and of course agency) considerations

[59] The reason for not adding promotions as an explanatory variable has to do with the amount of observations that would be lost due to this inclusion. However, experimenting with a variety of different potential covariates did not alter the results dramatically.

Finally, when experience is approximated by age, the generated profiles are similar to the ones produced when using the years in the labour force as a proxy for experience. The magnitudes though (and the steepness) has been raised as shown in figure 4.4.

The policy implications of our findings have two main components. The first is directly related to the on going debate about the involvement of the private sector in the provision of public services while the second component refers to the reforming of pay and working conditions in the public sector. A detailed examination of the political process behind public sector reformation is above our intentions. However, fundamental theoretical differences between the two main political parties do exist: The reform of public services had been central to the labour party's agenta since 1997 while the Conservative Party had always been thinking about public sector as being compatible with the idea of a minimalist state. Labour's policy is based on the belief that state intervention and investment is essential and integral to enhanced competitiveness. On the other hand, for Conservatives, an expansion of the public sector is viewed as jeopardizing both competitiveness and employment, Bach (2001). These theoretical perceptions should in principal have an effect to the relative earnings profiles only if we assume that the formation of human capital in the private sector is slow and that the evolution of wages is based on human capital. However, we have no reason to believe that human capital is not accumulated in the public sector at the same speed as it does in the private one. What can actually be proposed as an argument for the need of reformations is the recognition that public sector has suffered decades of underinvestment and this fact can actually be an obstacle for competitiveness. In any case, the actual means that public servants are using while currying out their duty may not be of severe importance when examining earnings profiles. These resources rather affect other aspects of public sector operation such as safety and/or productivity. But what could actually differentiate the earnings profiles in this respect is the extent to which human capital is linked to the actual payment. The non-competitive nature of public sector may imply that that payment is not

actually related to human capital and at the same time workers are attracted in the public sector for mainly non-pecuniary reasons.

4.8 Conclusion

Using the 14 available BHSP waves (1991-2004) we tried to estimate the experience-earnings profiles for the public and private sector in attempt to isolate similarities or differences. Panel Data regressions showed that in all the specifications we experimented with, public sector constantly and significantly generated a steeper profile than the corresponding profile of the private sector. The explanation we offered for this result is that employees may be exchanging a steeper profile (like the one that is offered by the private sector) with more attractive to them non-pecuniary job aspects. Although a very detailed breakdown can not be achieved at this point, mainly due to the non availability of necessary data, our empirical strategy offers an adequate approximation. When tenure is used as a proxy for experience, comparing earnings profiles before and after correction for selection bias offers an explanation for the slope difference of the two sectors. A similar sequence can not be plausible when using years in the labour force and age as proxies, because of the complexity of relationships that these variables are encapsulating. Nevertheless, the evidence in favour of the slopes differentiation remains. Finally, in terms of policy implications, a policy maker that will try to change the nature of employment relations in the public sector must understand that for some employees it is exactly these employment relations that have attracted them to public sector at first place. Consequently, either job mobility must be anticipated or decreased levels of job satisfaction which can be associated with adverse employee behaviour.

Table 4.2
Probability of Public Sector Employment (Probit regressions)

		Model 1		Model 2		Model 3	
Variable	Sub-sample rate	Estimate	T stat	Estimate	T stat	Estimate	T stat
Male	22.32	-	-	-	-	-	-
Female	41.45	0.583***	44.252	0.633***	13.94	1.557***	26.385
no children	30.82	-	-	-	-	-	-
child2	33.64	0.064***	3.426	-0.007	0.114	0.155***	3.301
child3	34.41	0.100***	5.324	0.061	0.938	0.166**	3.151
Unconstrained	32.81	-	-	-	-	-	-
Over employed	31.44	-0.110***	7.837	-0.131**	2.757	-0.118***	3.725
Underemployed	32.28	0.117***	4.765	0.223*	2.352	0.223***	4.498
No promotion opps.	28.80	-	-	-	-	-	-
Promotion opportunities	35.74	0.049***	3.587	0.021	0.445	0.070*	2.263
No bonus payment	40.84	-	-	-	-	-	-
Bonus payment	11.05	-0.974***	60.813	-0.964***	17.453	-0.990***	27.02
Age 18-25	18.36	-	-	-	-	-	-
Age 26-45	33.13	0.324***	15.006	0.364***	4.682	0.437***	8.067
Age 46-55	39.45	0.523***	20.902	0.490***	5.627	0.813***	11.548
Age >56	36.69	0.682***	22.246	0.651***	6.538	1.078***	11.935
Union member	55.37	1.471***	105.652	1.539***	31.824	2.344***	61.286
No union member	9.79	-	-	-	-	-	-
Unmarried	28.15	-	-	-	-	-	-
Married	34.85	0.006	0.401	0.09	1.79	0.110*	2.464
London	38.47	-	-	-	-	-	-
South east	28.55	-0.188***	6.84	-0.181	1.715	-0.291**	2.866
South West	26.38	-0.256***	7.941	-0.334**	2.763	-0.511***	4.007
Midlands East	24.54	-0.382***	12.505	-0.451***	3.899	-0.704***	6.049
Midlands West	27.70	-0.361***	10.98	-0.415**	3.175	-0.585***	4.455
Manchester and Merseyside	30.89	-0.256***	7.112	-0.17	1.305	-0.381*	2.552
North	29.64	-0.356***	12.874	-0.415***	3.915	-0.565***	5.211
Wales	35.70	-0.151***	5.161	-0.126	1.239	-0.025	0.224
Scotland	37.17	-0.135***	4.922	-0.185	1.87	0.028	0.266
No education	23.90	-	-	-	-	-	-
Higher degree (Msc, Phd)	60.63	1.162***	28.654	1.116***	8.026	2.744***	17.661
Other Higher qualifications	32.94	0.446***	19.685	0.480***	5.484	0.794***	9.876
University degree	51.28	0.928***	35.785	0.919***	9.32	2.026***	20.303
Teaching/Nursing qualifications	69.98	1.027***	28.313	0.887***	6.096	2.342***	17.21
GCE a levels	24.75	0.239***	9.117	0.259*	2.54	0.399***	4.313
GCE o levels	24.76	0.201***	8.615	0.128	1.333	0.294***	3.458
CSE 2-5	15.89	-0.003	0.084	0.380**	2.623	-0.109	0.785
Commercial qualifications	27.75	0.102*	2.253	0.12	0.664	0.423*	2.57
Other qualifications	15.23	-0.366***	3.7	-0.652	1.468	-0.126	0.398
No performance pay	32.54	-	-	-	-	-	-
Performance pay	26.57	-0.137***	5.953	-0.074	1.091	-0.314***	5.886

Table 4.2 continued

other job aspects	34.62			-	-	
Most important aspect : payment	24.34			-0.379***	5.552	
Most important aspect : security	33.81			-0.073	1.105	
Most important aspect : work it self	48.85			0.173**	2.814	
Most important aspect : hours	34.24			-0.151	1.43	
Constant term		-2.472***	52.504	-2.618***	15.84	-5.807*** 36.048
Log likelihood		-26050.303		-2240.5831		-15439.8
Year Dummies		YES		NO		YES
Random Effects		NO		NO		YES
Sample Size (No of Groups)		63332		5513		63332(13835)
Pseudo R2		0.34338		0.3778		
Wald chi2						6315.61

Notes: Absolute t values reported
*, **, *** denote significance at 5% , 1% and <1% respectively

Table 4.3: Estimation results : Dependent Variable, Log Monthly Earnings

	Private Sector			Public Sector			Private Sector			Public Sector		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Variable												
sex	-0.541***	-0.569***	-0.578***	-0.480***	-0.516***	-0.518***	-0.572***	-0.599***	-0.609***	-0.514***	-0.533***	-0.538***
	(49.76)	(52.01)	(52.98)	(27.28)	(28.86)	(28.98)	(52.94)	(55.76)	(56.96)	(30.92)	(31.63)	(31.89)
job tenure	**0.094987*** **			**0.00959*** **			**0.012166*** **			**0.009485*** **		
	(9.73)			(7.69)			(12.26)			(7.64)		
job tenure^2	**-0.0002744*** **			**-0.00025*** **			**-0.00036*** **			**-0.00025*** **		
	(6.80)			(4.80)			(8.86)			(4.79)		
Years in Labour Force		**0.03463*** **			**0.02328*** **			**0.03375*** **			**0.02664*** **	
		(33.41)			(13.62)			(36.61)			(14.25)	
Years in Labour Force^2		**-0.00077*** **			**-0.00060*** **			**-0.00078*** **			**-0.00061*** **	
		(36.28)			(16.15)			(39.13)			(16.81)	
Age			**0.07225*** **			**0.04856*** **			**0.080917*** **			**0.04957*** **
			(39.17)			(16.77)			(43.17)			(17.52)
Age^2			**-0.00088*** **			**-0.00058*** **			**-0.00098*** **			**-0.0006*** **
			(39.98)			(17.77)			(43.74)			(18.53)
union	0.178***	0.169***	0.168***	0.306***	0.272***	0.269***	0.082***	0.081***	0.079***	0.195***	0.190***	0.188***
	(21.34)	(19.09)	(18.95)	(18.58)	(14.89)	(14.67)	(14.12)	(13.82)	(13.61)	(19.42)	(18.72)	(18.54)
Higher Degree (MSc, Phd)	0.736***	0.779***	0.717***	0.716***	0.575***	0.697***	0.667***	0.667***	0.631***	0.639***	0.623***	0.607***
	(23.04)	(23.15)	(22.82)	(21.42)	(16.44)	(20.53)	(20.44)	(20.17)	(19.87)	(19.89)	(18.28)	(18.73)
Other higher qualifications	0.242***	0.235***	0.247***	0.381***	0.314***	0.374***	0.223***	0.202***	0.223***	0.349***	0.330***	0.335***
	(18.75)	(17.37)	(19)	(17.36)	(13.61)	(16.58)	(16.96)	(15.04)	(17.12)	(16.22)	(14.60)	(15.24)
University degree	0.507***	0.541***	0.523***	0.566***	0.453***	0.558***	0.471***	0.471***	0.475***	0.511***	0.499***	0.490***
	(27.43)	(27.96)	(28.05)	(21.67)	(16.42)	(20.62)	(25.22)	(24.45)	(25.62)	(20.28)	(18.60)	(18.96)
Teaching/Nursing qualifications	0.231***	0.216***	0.228***	0.515***	0.415***	0.524***	0.137***	0.107***	0.128***	0.451***	0.447***	0.448***

Table 4.3 continued

	(7.41)	(6.99)	(7.50)	(18.21)	(14.39)	(18.30)	(4.36)	(3.50)	(4.20)	(16.52)	(15.89)	(16.35)
GCE A levels	0.133***	0.167***	0.185***	0.255***	0.224***	0.264***	0.138***	0.152***	0.192***	0.246***	0.225***	0.251***
	(9.24)	(11.16)	(12.64)	(10.32)	(8.73)	(10.42)	(9.41)	(10.12)	(13.01)	(10.07)	(8.87)	(10.03)
GCE O levels	0.125***	0.014***	0.155***	0.211***	0.176***	0.211***	0.070***	0.126***	0.118***	0.191***	0.162***	0.189***
	(9.20)	(9.64)	(11.34)	(8.94)	(7.26)	(8.80)	(5.22)	(9.03)	(8.63)	(8.21)	(6.78)	(7.99)
CSE 2-5	0.005	0.003	0.051**	-0.055	-0.586	-0.050	-0.053	0.0001	0.021	-0.056	-0.090**	-0.049
	(0.25)	(0.18)	(2.43)	(1.37)	(1.40)	(1.22)	(2.56)**	(0.01)	(1.05)	(1.40)	(2.20)	(1.22)
Commercial Qualifications	0.125***	0.029**	0.10***	0.111**	0.101**	0.117**	0.103**	0.083**	-0.084**	0.107**	0.097**	0.113**
	(4.21)	(3.29)	(3.67)***	(2.35)	(2.10)	(2.50)	(3.40)	(2.85)	(2.84)	(2.27)	(2.04)	(2.42)
Other Qualifications	0.044	0.023	0.04	0.094	0.146	0.076	0.004	0.031	0.045	0.137	0.130	0.119
	(0.373)	(0.50)	(0.90)	(0.98)	(1.50)	(0.79)	(0.95)	(0.66)	(0.98)	(1.43)	(1.35)	(1.26)
Annual Increment	0.051***	0.052***	0.051***	0.086***	0.086***	0.087***	0.057***	0.057***	0.056***	0.088***	0.088***	0.086***
	(11.62)	(11.79)	(11.57)	(13.68)	(13.4)	(13.62)	(12.98)	(12.86)	(12.57)	(14.14)	(13.89)	(13.67)
Selectivity term	-0.175***	-0.155***	-0.154***	0.114***	0.076***	0.071***						
	(16.66)	(13.83)	(13.84)	(8.7)	(5.48)	(5.11)						
constant term	7.642***	7.453***	6.397***	7.112***	6.427***	7.218***	7.656***	7.458***	6.339***	7.391***	7.400***	6.609***
	(311.29)	(253.51)	(141.16)	(93.79)	(62.2)	(85.27)	(307.83)	(257.9)	(144.56)	(108.72)	(101.18)	(72.15)
Occupational Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year Dummies	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R2 Within	0.1359	0.1452	0.1516	0.1102	0.1186	0.1224	0.1424	0.1508	0.1586	0.1092	0.1178	0.1216
R2 Between	0.4674	0.4991	0.5014	0.4512	0.4535	0.4517	0.4547	0.4948	0.4989	0.4465	0.4521	0.4506
R2 Overall	0.4629	0.4872	0.4895	0.4157	0.4267	0.4260	0.4534	0.4827	0.4860	0.4126	0.4266	0.4257
Wald chi-square	14050.44	14961.29	15331.193	5667.36	5790.11	5849.19	14339.45	15381.0	15898.16	5748.96	5923.64	5990.66
No of Observations	40529	38355	38255	19347	18693	18693	42073	39432	39432	20045	19331	19331
No of Groups	10300	9842	9842	4956	4841	4841	10633	10058	10058	5099	4973	4973

Notes : 1)Absolute t statistics in parenthesis
2) *, **, *** denote significance at 5% , 1% and <1% respectively

Figure (4.1): Wage – Job Tenure Curve, BHPS waves 1-14

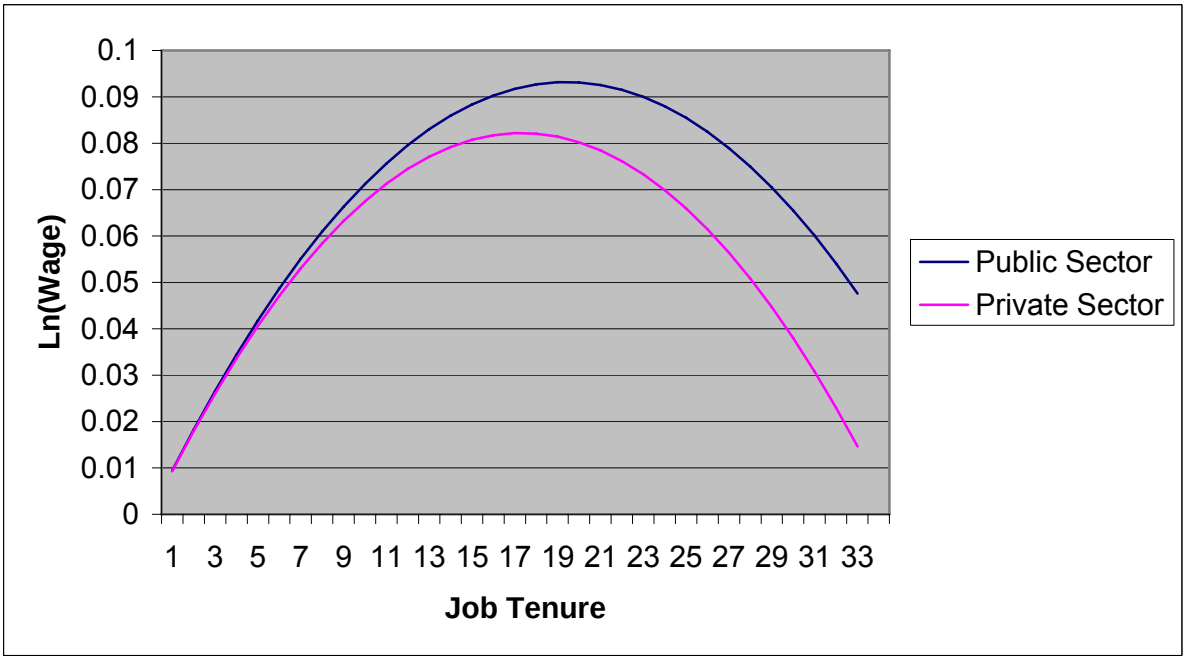


Diagram (4.2): Wage – Job Tenure Curve after correction for selection bias, BHPS waves 1-14

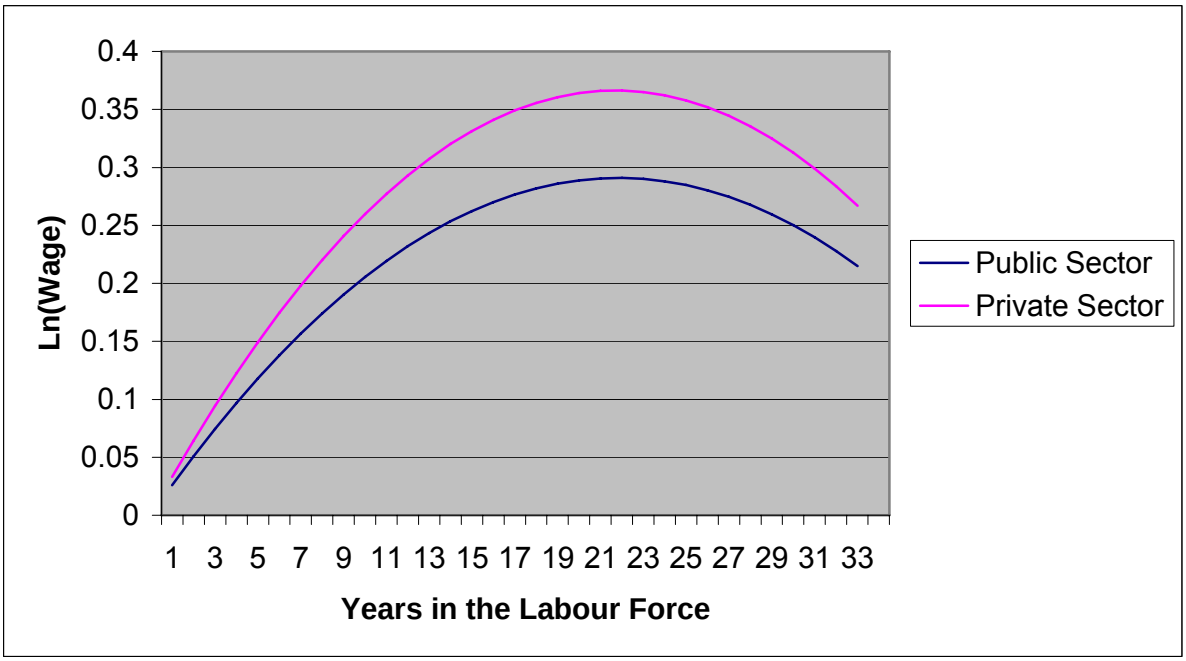


Diagram (3): Wage – Years in the Labor Force Curve, BHPS waves 1-14

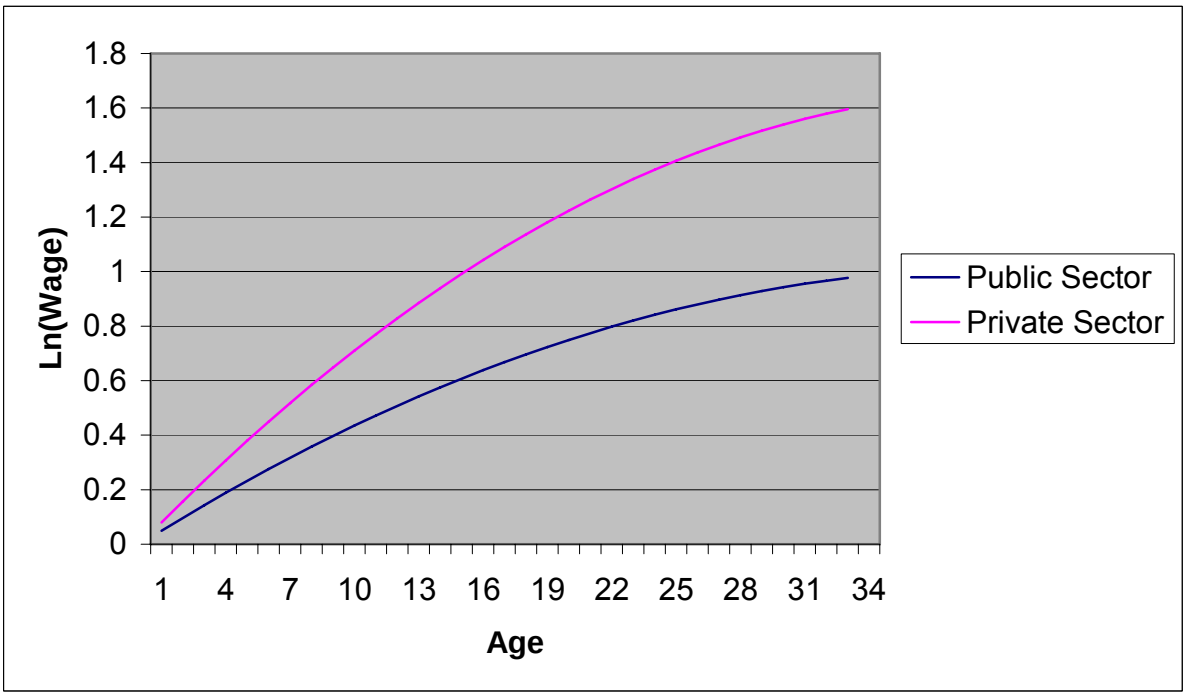


Diagram (4): Wage – Age Curve, BHPS waves 1-14

Chapter 5

Transition to self employment and the exogeneity of Windfalls

5.1 Introduction

Self-employment has long been considered by politicians as a convenient tool for the reduction of unemployment and a source of job creation.UK government for instance provides financial support in the form of transfer payments to those unemployed who would be willing to set up their own business (Duggan, 1998) while similar schemes exist in almost all European Union countries. In the relevant literature there have been numerous studies with contradictory conclusions as to whether promotion of self-employment is indeed a decisive parameter for unemployment reduction and jobs growth. European Commission's green paper (2003) on "Entrepreneurship in Europe" highly supports the notion of self employment and refers particularly to Netherlands and US. Evidence from the former indicates that between 1994 and 1998, 8% of fast-growing firms created 60% of employment growth within existing enterprises while in the US, 350000 fast-growing firms created two-thirds of all new jobs between 1993 and 1996.

Counterarguments are primarily based on econometric estimations which formalise the scepticism as to whether a positive relationship between transition to self employment and unemployment rates should be expected. Blanchflower (2000) conducted an extensive survey for 24 OECD countries, founding contradictory results between them. A statistically positive correlation was established for Austria, Denmark and Finland while for the UK, Germany, Belgium and Sweden, the opposite was the case. This last result for Sweden was also confirmed by Lindl and Ohllson (1996). Using data from 1981, reported a negative correlation between unemployment and self-employment which means that the higher the economic activity is in a country, the more self-employed individuals there will be.

Although economists failed to converge into a consensus about the impact of labour market conditions on the self-employment rate, the opposite seems to be the case about the importance of liquidity constraints in the decision of individuals to start up their own business. Well cited studies by Evans and Leighton (1989) and Evans and Jonavonic

(1989) present results showing that keeping some personal and demographic parameters constant, people with greater family assets are more likely to switch to self-employment from employment.

A growing concern in the literature about the potential usefulness of wealth as self employment predictor comes from the fact that this variable is likely to be correlated with omitted factors that may themselves be affecting the probability of transition. For example, particularly motivated and ambitious individuals may be both wealthier and more likely to take the plunge into self-employment. In this sense, studies like Holtz-Eakin et al. (1994a), Holtz-Eakin et al (1994b) for the US and Blanchflower and Oswald (1998) for the UK have used unanticipated "windfall" payments as a predictor of self-employment entry and survivor. These payments are considered to be purely exogenous and consequently reveal the true impact of liquidity constraints in the decision to transmit into self-employment.

Nevertheless, the view that windfall payments can be considered to be exogenously given can easily be criticised. Leaving inheritances aside, (although the actual level of which may reveal information in a loose sense about a potential inherited ability), a lottery winning requires that the recipient of the prize has taken a discrete decision to participate into an action that involves risk. Given that setting up a business from scratch is also a risky choice, there could also be a correlation between this type of windfall and the self-employment decision. Obviously, a participation in a lottery may not necessarily imply a risk-loving behaviour. Someone who is in a bad financial situation is possible to see a lottery as his last hope to exit distress. Consequently, what we would actually need in order to obtain a rough idea about the risk-loving side of a lottery is the amount actually spent on it, as a proportion of his income. We would also like to know how frequently someone is participating in a lottery. Playing once per year can not give as any idea of someone's tendency to adopt risky decisions. But an information that a person is constantly participating in gambling and is actually devoting

20% of his annual income in these activities can be very informative. In this respect we would speculate that this person may be more likely to transmit to self employment, even if a large lottery gain is not realised. Due to data limitations we can have only information about the lottery receipt and not the amount spent on the lottery which is obviously restrictive.

The exogeneity of windfalls has also been considered in a very recent paper by Georgellis et al. (2008). In particular, these authors examined if personal specific attributes like risk averseness, emotional intelligence and social awareness can cause individuals to behave in such a way as to affect their exposure to ostensibly random effects. Their results indicated, among the other, that happier respondents, those who provide care for a non-residential person, those who are active in a social, voluntary or other community group and those who report that they have someone who would potentially help them in a crisis, are all significantly more likely to enjoy a concurrent or future windfall, *ceteris paribus*. This finding questions the validity of windfalls as instruments for modelling the impact of wealth on individual transition to self-employment.

The scope of this paper is to contribute to the literature in two distinct ways:

- Firstly, to assess if the inclusion of variables capturing the social characteristics of an individual has any statistical power in predicting the subsequent transition into self employment, conditional upon receiving a windfall. If this is indeed the case, it could be suggested that the self-employment incidence is not exclusively driven by windfalls *per se* but part of the trend can be attributed to these social characteristics which are essentially related to personality traits and risk behaviour.

- Secondly to examine how the issue of job satisfaction affects the previously obtained estimates on the probability of becoming self-employed. The idea is that even if liquidity constraints do not exist, an employee who is happy with his/her working place would be willing to transmit to self employment anyway.

This work is organized as follows: Section 2 provides a background of self employment with a particular reference to self-employment motivation. Section 3 summarises the relevant literature in the area, focusing in particular on the relative effect of windfalls in the prediction of self-employment spells. Section 4 describes briefly the data and explains the methodological approach. Section 5 presents the results while section 6 concludes.

5.2 Moving into Self-Employment

The question why someone would decide to become self-employed could be answered if we consider a vector of parameters. Self employment literature highlights both pecuniary and non pecuniary motivation. The former is related to the opportunity that self employment may provide for excessive (compared to full employment) earnings while the latter can be seen as a chance for the individual to set his or her own schedule, to work independently, to answer to nobody and to avoid (or escape from) an unemployment incidence.

Rational behaviour implies that the utility that someone derives from self employment should exceed the corresponding utility from alternative states, namely paid employment and (only to the extent that this is voluntarily) staying out of the labour force. More strictly speaking, the discounted present value of the self employment utility

streams over the life time should be higher than the present value of the utility that an employee receives during his working life. This more narrow definition aims to take into account the possibility that self-employment may not start paying off its full potential immediately but only after a certain period. In this respect, Dolton and Makepeace (1990) found evidence that the probability of self-employment depends positively on the differential between the *expected* self-employment earnings and paid employment earnings.

The extent to which these expectations are finally realised is an open and challenging research question. Hamilton (2000) estimates (on a US dataset) that on average, a self-employed individual with ten years in business enjoy 35% less earnings than an average employee in paid employment and this result is not conditional upon a self-selection process of low ability workers into self-employment. In addition, his results indicated that self employed have both lower initial earnings and lower earnings growth.

Estimations of self employment earnings can nevertheless be problematic in some ways. Since there is a no explicitly defined salary, a researcher must necessarily rely on data with proxy validity. What is usually reported in the surveys is the net profit of the entrepreneur. However this variable can be deliberately underestimated for tax reasons and also exhibit significant variation depending on the investing plan and the exact method of the calculation of depreciations. Hamilton (2000) mentions also that supplementary compensation schemes for paid employees like pensions and health insurances are well possible to create problems in the interpretation of the earnings differentials. Finally, according to 'superstar' theory (Rosen, 1981) the distribution of self employment is very possible to be skewed so that the comparisons of mean earnings of self-employment and paid employment will be strongly influenced by a handful of high-income entrepreneurial superstars.

5.2.1 Self Employment and Liquidity Constraints

Apart from the fact that different individuals may be willing to transit into self employment for different reasons, there is also strong indication that a large proportion of the working population is frustrated on its desire to pursue entrepreneurship. According to earlier evidence from the International Social Survey Programme (1989), 63% of Americans, 48% of Britons and 49% of Germans expressed a desire to become self employed. More recent evidence from the Eurobarometer reconfirms these numbers which now rise to 69% for the US and 51 % for the fifteen European Union countries. A more detailed examination shows that self-employment desire reaches figures above 60% for Finland, Sweden, Belgium, Greece, Portugal, Spain and Ireland.

In most of the OECD countries the actual self employment rate does not exceed 15% (Blanchflower, 2000) which resulted in a significant number of studies trying to explain the reason why expressed desire is not transformed into an actual self employment transition. Liquidity constraints have been named as a primary suspect for this. Theoretical approaches (Stiglitz and Weiss, 1981) have emphasized that insufficient starting up capital and/or access to credit markets can be a binding constraint on individuals' choice between paid employment and self employment. Empirical studies by Evans and Jonavonic (1989) and Evans and Leighton (1989) also suggest how capital dependent is the transition to self employment while Taylor (2001) reinforces this view using the BHPS. In all cases, the estimation results indicate that the relationship between capital and probability of transition is positive but not monotonic. Evans and Jovanovic (1989) support empirically that initial wealth is an important parameter affecting the transition probability, *if and only if* there are liquidity constraints. This implies that in an economic environment with external funding opportunities, lack of initial assets is not necessarily a binding constraint. However, their theoretical model which precedes their empirical estimation is based on the assumption that individuals are risk neutral. But seeking liquidity from an external source unavoidably exposes the potential entrepreneur

to risk and this fact may have additional consequences for the decision to transmit into self employment.

Table 5.1 provides subjective evidence from the European Commission's Eurobarometer (2000) on the importance of several parameters in the self-employment pursue. Respondents were asked to rate on a 0 to 100 scale their personal evaluation of the practical difficulties in starting a business, judging from four discrete aspects, namely the lack of financial support, the complexity of administrative procedures, the difficulty in obtaining information and the unfavourable economic climate.

Table 5.1 – Practical difficulties in starting a business (EU -15)

	B	DK	D	GR	E	FIN	F	IRL	I	L	NL	A	P	SW	UK
lack of financial support	73	64	70	80	77	62	76	68	74	76	50	72	82	66	72
administrative procedures	71	72	70	72	68	65	76	61	75	65	55	66	80	75	64
information	59	46	54	59	59	43	65	52	65	55	40	43	72	54	55
economic climate	59	58	61	72	61	50	55	42	67	55	39	45	78	60	60

Source : Flash Eurobarometer 83, "Entrepreneurship", European Commission (2000)

It is apparent that the lack of financial support is considered by individuals as a significant obstacle that is likely to constraint any entrepreneurship plans. A certain degree of homogeneity is noted between some countries but with few noticeable exceptions like the Netherlands and Poland. These subjective answers support the previously mentioned studies and emphasize the role of capital constraints on the transition decision to self employment.

5.3 Endogenous wealth and windfalls

An important issue of consideration when estimating the transition probability is whether the initial wealth can be considered purely exogenous. A natural thought is that those who have high ability are at the same time more likely to have more wealth. In this case, the variable that captures pre-transition wealth will be also carrying the impact of the entrepreneurship ability that an individual may possess and consequently, the coefficient for the wealth variable will be upwards biased. In a similar consideration (but acting on the opposite direction), those employees who have larger endowments of ability may require less start-up capital than employees who might be less talented in entrepreneurship[60]. One thought that can possible alleviate these concerns is that ability is not necessarily an exogenous parameter in the sense of a personality (time invariant) characteristic. Although personality traits can be part of an individual's ability to be a successfully businessman, several other self-employment aspects can be learned either through education or during the paid-employment experience. Consequently, variables that indicate whether the potential entrepreneur have had managerial duties in the past, the years of education or in a broader sense the age of the individual can be indicative of the self-employment probability and possibly moderate the endogeneity issue that the correlation between pre-transition wealth and unobserved ability is likely to imply.

Due to the growing awareness of the endogeneity problem, attention has recently shifted to "windfall payments" as a predictor of self-employment transition. These money receipts are less likely to be correlated with individual ability and personality traits and hence reveal the extent to which liquidity issues can discourage individuals in setting up their own firm. A significant part of the literature has been focused on inheritances as this type of windfall is more likely to be purely exogenous and in any case is easily accessible within most data sets. Other forms of windfalls may include a personal accident claim,

[60] On the other hand, Astebro and Bernhardt (1999) suggest that a greater stock of human capital raises the optimal level of initial capital investment in the business, implying that entrepreneurs with greater ability will require more funding to accomplish their investment plans.

redundancy payments and a lottery gain. What makes windfalls particularly useful as a tool to assess the liquidity problem is the fact that they are totally unexpected. In these sense, if insufficient sources of funding is an important constraint for entrepreneurship, a windfall should act significantly and positively in the probability of transition to self employment.

The positive relationship between windfall gains and the probability of self-employment is supported in a numerous of studies. Holtz-Eakin et al (1994a, 1994b) estimate that an inheritance increases the probability of entry into self employment from paid employment and also that an existing entrepreneur will stay in business. However, an interaction between the individual wealth and the amount of inheritance showed that the greater the individual wealth, the smaller the incremental effect of inheritance. This suggests that wealthy and non wealthy respondents react quite differently to the receipt of a windfall. Similar results highlighting the positive effect of an inheritance can also be found in Blancflower and Oswald (1998), Burke et al. (2000, 2002) and Taylor (2001). These studies also emphasize the significance of the squared transformation of an inheritance which implies that the positive relationship between a windfall and self-employment probability is decreasing in the amount of the receipt. A more recent BHPS study by Georgelis et al (2005), enhances these findings with gains of more than £20000-£22000 reducing the probability of transition. Redundancy payments and inheritances raise the self-employment probability while lottery winds reduce the probability of transitions.

Although the above mentioned studies support the hypothesis of liquidity constraints, some scepticism can be raised, particularly for specific types of windfalls. Lottery gains for example can imply that the potential entrepreneur is keen in exposing him/her self to risk. Consequently, a positive coefficient of the lottery gains variable may not necessary imply funding problems but just indicate that since starting-up a business is by definition a risky choice, whoever has established a risky past is more likely to

transmit to self-employment. A similar argument can be supported for layoff compensation. If the redundancy is not the result of an economic downturn or an unsuccessful matching but results from inadequate individual's ability, then any form of money flows in the form of redundancy compensation will not necessarily increase the probability of self employment.

The extend to which windfalls can be considered to be exogenous has been recently examined by Georgelis et. al. (2008) Using data from the BHPS they found that characteristics such as age, education and race act significantly upon the probability of receiving a windfall. More interestingly, their results revealed that windfall gains are correlated with a variety of social activities and personality characteristics. Those individuals who actively participate in social groups, like religious, community groups are more likely to receive certain forms of windfalls, ceteris paribus. For example, being active in a voluntary group increases the probability of receiving an inheritance while a participation in a religious group is associated with an increased probability of receiving an insurance payment.

Although it is difficult to provide intuitive explanation for some of these correlations, it is apparent that the social dimension of an individual's activity is likely to affect incidents that are seemingly independent. Additionally, these social characteristics may be at the same time indicative for the decision that someone takes to transit from any labour force status to self-employment. For instance, in Georgelis et. al. (2008), a positive answer to the question "Is there anyone who really appreciates you" obtains a positive coefficient in the probability of affecting the receipt of an insurance payment. At the same time, an insurance payment is positively associated with self employment transition (Georgelis et al, 2005). Consequently, it is not clear whether an insurance payment acts independently on the probability of being self-employed and is not related to the fact that whoever has a high level of self esteem is more likely to receive a windfall and transmit at the same time.

This is a primary gap that this paper aims to fill. We endeavour to ascertain the relative impact of variables that capture how socially active a person is on the probability that this person will become self-employed, conditional upon the receipt of a windfall and after controlling for various other relevant characteristics. If this probability does indeed depend on personality traits and aspects related to involvement into social activities then we would expect that the autonomous impact of windfalls on the self employment probability will reduce in magnitude and in some cases may become insignificant. Such a result would unavoidably cast doubts on a series of related studies which used windfalls as a self-employment predictor, in the hope that these payments would act exogenously on a self-employment event and would be uncorrelated with any unobserved parameters that affect the same event.

5.4 Data Description and Empirical Strategy

Our empirical estimation is based on data from the British Household Panel Survey. BHPS is considered to be representative of the British Population and its panel nature helps to identify for a single individual movements between various forms of labour market activity. Therefore we can easily identify the exact year at which a respondent entered or quit self-employment and additionally the labour market status that preceded this transition.

Our sample consists of pooled data for 10 years, from 1994 to 2004. Windfalls are recorded annually with the exception of 1996. By the term “windfalls” we consider unexpected gains from one of the following sources: life insurance policy, pension layout, accident claim, redundancy payments, inheritance and lottery or any other forms of gambling. Other types of windfalls that can not be nested within these categories are recorded separately under the title “something else”.

Self-employment status is monitored annually by two BHPS variables, *jbstat* and *jbsemp*. The former is related to a plethora of possible outcomes which correspond to all possible employment states that an individual may be into. The latter asks only if the respondent considers him/her as being in self-employment or in paid employment. For reasons of consistency we keep in the sample only those people who respond that they are self-employed in *both* questions.

The empirical strategy that Taylor (2001) and Georgelis et al. (2005) adopt is to observe an individual at three distinct moments of time, t-1, t and t+1. Having recorded a respondent's labour market status at time t-1, they assess how windfall payments received at time t affect the respondent's labour market status at t+1. Then, they use a probit regression to assess the relative impact of a numerous of explanatory variables on the probability of transiting into self employment. Although this methodology is in general terms appropriate since it does capture labour market transition conditional upon previous labour market status and a windfall receipt, there is a case where a windfall may arrive after the decision to transmit in self employment has been taken. To be more specific, if for an individual the employment status at t-1 is, say, paid employment and the status at t+1 is self employment, then this individual qualifies for being characterised as someone who transmitted. However, if employment status at t is also self employment and given that windfalls arrive at t, we can not be sure whether this windfall payment came after the transition to self employment or before. For this reason, we are mainly experimenting with a specification which considers an employee as having been transmitted if his/her employment status at t+1 is 'self employment' while employment status at t is not. In comparison with the fist definition of transition, this one allows for less incidences of self-employment transition.

Also, in a more detailed examination, we consider whether certain types of windfalls have an impact on specific types of self-employment and on the number of workers that the entrepreneur employees.

Attention is restricted to survey participants aged between 18 and 60 to ensure that these are in working age and are not eligible to receive any lump sump payment associated with retirement from paid work. In addition we consider only those workers who work more than thirty hours per week. Our pool consists of almost 83000 individuals from which 48% is women and 52% is men. Self employment accounts for a 12.06% while there is a 19.76% average probability of receiving a windfall of any type with gains from lottery or any other kind of gambling being more common. From all individuals who consider them selves to be self employed 78.6% are men and 22.4% are women.

We utilise a wide range of explanatory variables in attempt to control for all those parameters that can potentially affect the decision to move from paid employment to self employment. In this respect, apart from our main interest which is the amount of the windfall receipt, we account for race, age, sex, marital status, pre-transition employment status, family income, education (in 9 categories), receipts from dividends and interest, length of previous labour status spell, intergenerational effects and the number of children in the household. The usual year and regional dummy variables are also in place.

As mentioned above, a noticeable difference between this study and previous research is the consideration of variables that are indicative of the amount of "social capital" that is associated with each respondent. Social Capital is a term which is used to describe aspects of the social life that have a positive impact on the individual well being. Obviously, since the word "Social" is used, these aspects are mainly related to our interpersonal relations with other people. Such relations can be found within a family, a neighbourhood, a local community, a religious group, a social group and so forth. As John Locke famously stated[61], man is a social animal. Consequently, by nature we are entitled to create and promote relations with other people. The quality of these relations is vital for our happiness, mental well-being and life satisfaction. The social networks we

[61] Paraphrasing Aristotle who argued that man is a political animal.

belong to include many of the social customs and bonds that define them and keep them together, are what we mean when we talk about social capital. It should be mentioned that someone may not be participating voluntarily in a social network. For example, being a member of a neighbourhood is simply dictated by the location of your property and you have no power to select your neighbours, although certain discretion may exist since there are high income and low income areas. We are also interested in social capital that is the result of the individual's discrete choice, since this choice can be indicative for his personality and may also reveal unobserved elements that can also have an impact (positive or negative) on his/her decision to transmit to self employment. For example, if someone is active in a volunteer group, he may have strong feelings towards the ethical sides of life and thus choose to work in the public sector which is supposed to be closest to the idea of promoting the common good.

We make use of an extensive variety of variables that are related to the respondent's participation in social life and other that aim to proxy the immediate support network that is available to each potential entrepreneur[62]. In this sense we examine if the respondent is member of a religious, voluntary or any other community group, if he/she is active in a social group, if he/she thinks that there is someone who will listen, if there is someone that could help him/her and finally if there is someone who really appreciates him/her. Although these variables are informative for the social capital of each individual, they are recorded every two years, starting from 1995. In terms of the econometric estimation this will obviously have an impact on the sample size and also affect the number of the transition cases (the dependent variable), potentially resulting in misleading coefficients. And in any case we need to refer to roughly the same sample size in order to have a stable basis for comparison between a specification which includes social capital variable and one that does not.

[62] We don't consider union membership as social capital variable. Although union can certainly be considered as a network, the choice to join it may be related to working conditions that the member is unhappy with.

In order to by-pass this problem we proceed in the following way: for each individual we end up with only one social capital value depending on whether this person has ever considered him self as being active in one of the relevant categories. Consequently, if a respondent replied for example in 1996 that he is active in a community group, we then consider that he has also been active in this group for all the available years, even if a previous or later response indicates that he was not active before or he is not active any more. The rational behind this assumption is that if there is anything that can relate social participation with self employment transition this is not the participation *per se* but the motivation or inclination for doing so. In this respect, if someone stopped being active in a group this could be attributed, for instance, to lack of available time or to not being happy with the particular social group environment. However the tendency or the desire of being active in a group does not necessarily fade away and this is part of a person's character that we are particularly interested in. A slightly differentiated logic applies to those variables that are used as a proxy the immediate support network available to the survey participant. In this case we calculate the average response for each person and then we assign the response value that is closer to the calculated average.

Finally, in an important addition to self employment literature we include a variable that measure how satisfied people are with their job, prior to transit into self employment. It must be expected that an employee who is overall satisfied with his/her job would not be as determined to become self-employed as a non-satisfied employed, conditional upon the amount of windfall receipt. In this specification, the educational category which refer to those with commercial qualifications (458 observations) drops out since restricting the sample to only those individuals who report job satisfaction does not yield any observations (to serve as a comparison basis for estimation) in which both the educational dummy and the transition dummy obtain a value of '1' .

5.5 Estimation Results

Table 5.3 presents the results from deploying a weighted probit specification in which we regress a dummy variable indicating transition into self employment against a numerous of explanatory parameters, as explained in the previous section and described in table 5.2. In the first column of Table 5.3 the estimations do not include social capital variables which are included in the third column. The second column also includes dummy variables for the specific type of windfalls while in the fourth column (specification) we also consider the impact of job satisfaction.

As it is evident from column one, we are in the position to verify the statistical significance of the amount of the windfall payments. The amount that someone receives as a windfall payment is positive and statistically significant. However, the squared version of windfall payments, although negative, as it has been documented in the literature, has only a very marginal significance with a t statistic of 1.52 which is consistent with the results from some specifications (using also the BHPS) that Georgelis et. al. (2005) experimented with.

Sex and age are, as expected, decisive parameters for self-employment prediction. The former has a negative sign while the latter enters the equation positively with its squared transformation being negative and significant at the same time. This is in line with previous studies which also support the non linear age effect. We did not find any significant race effects or any particular relation between the number of children in the household and the probability of becoming self employed.

From all nine educational categories (with reference to no education at all), only those who have a university degree and those who have obtained A-Levels are statistically more likely to end up into self employment. One thought about why the coefficient for individuals with higher education (for example MSc holders) is not significant is that these people, due to their education, are in the position to negotiate for

better jobs and this makes the opportunity cost of self employment much higher. As far as individuals with lower education are concerned we speculate that these people may either end up in jobs that require vocational qualifications or lack the necessary education that could stimulate transition into some form of self-employment.

Moving to self employment, according to our results, is much more possible if the future entrepreneur was either employed or unemployed before joining self employment, rather than being out of the labour force. This comes to no surprise since labour inactivity can be a discreet choice that is linked to several personal preferences that would exclude any kind of labour market activity anyway. However we observe that being unemployed is stronger than being employed in predicting self-employment in the next period. This can in a sense justify why governments are so keen in providing primarily financial help to unemployed in order to start-up their own business. There is also positive and significant evidence in favour of the hypothesis that if someone's father has been self-employed, he or she is more likely to become self employed as well. However we can not argue the same with statistical safety for the cases where the mother has been self-employed.

Apart from the windfall payments, we have used a number of other variables that aim to provide a snapshot of the general financial status of the individual. For this thought, not much statistical significance was encountered. To be more specific, we used a variable to account for both the labour and non labour income of the potential entrepreneur. It turned out to be insignificant. Similarly we included three categories annual income receipts from dividends and interest. Only the first one referring to an income of 1000 pounds or less was negative and significant. The rest, as well as an interaction term accounting for receiving an income from dividends of 2500 pounds and a windfall was insignificant.

To conclude, two more dummy variables are present to account for managerial or supervisor's experience in the paid job prior to the self-employment transition. They are

both negative and significant which makes sense since a manager's position can be associated with a higher wage and workplace recognition and consequently increase the opportunity cost of transmitting into entrepreneurship.

The second column of Table 5.3 is derived from exactly the same specification as the first column, with the noticeable exception of including six dummy variables which refer to the specific type of windfall that occurred. They are all insignificant which indicate that it does not matter what is the source of the receipt but the amount that associated with a windfall as it shown by the significance of the "payment" variable. And for some types of windfalls like gambling, we encounter receipts of even 50 pounds which can by no means be expected to have any impact on a highly capital dependent decision like the one to move to self-employment[63].

To our disappointment, the inclusion of social capital variables does not noticeably alter the results presented in columns one and two. Although some of the social capital variables are statistically significant, the impact and the significance of the amount of windfall remain unchanged. To be more specific, being active in a trade union and in a social group affect negatively the probability of becoming self-employed while a positive effect is evident for being active in a voluntary group. In this sense, these variables act independently on the transition probability and are possibly related to a variety of personality attributes and traits. This of course does not necessarily imply that windfalls are exogenous. It merely indicates that the moving into self employment from any other labour market status is affected independently by both the amount of windfalls and some of the social capital variables. This view does not contradict the results by Georgelis et. al. (2008) since these authors derived a positive relationship between certain forms of social capital and the probability of receiving a windfall. But as our results indicate, it is not the windfall incidence *per se* that matters but the amount of money

[63] In an additional specification we interacted the amount of windfalls payment with the dummy that corresponds to the source of that payment. We got marginally significant results only for the interaction terms that involve earning from a lottery and an accident. They both have a positive coefficient which show that an increase in the payment for particularly these sources have a positive effect in the probability of self-employment transition.

received at each occasion. Consequently the significance of our social capital variable might possibly capture some issues related to each individual's unobserved heterogeneity.

Finally, we extend our analysis on windfalls by considering job satisfaction as a covariate in the equation that predicts transition into self employment, something that previous research did not take into account. Naturally, one should expect that job satisfaction is negatively correlated with the probability of moving into self-employment. This is one side of the coin. The other side refers to how the explanatory variables are affected by this inclusion. Clearly, we expect to encounter a differentiation to only those variables which, in some way characterise, the type of job someone possesses or his/her position within the job's internal structure and are linked with the satisfaction that an employee derives from the working place.

Results in the fourth column of table 5.3 verify that whoever is satisfied with his/her job is less likely to transmit into self-employment, *ceteris paribus*. The coefficient is negative and well established. In addition, there is again no significant alteration in the windfall payments' coefficient. However, what attracts our attention is how the two educational categories that were significant in the three previous specifications become now insignificant. Moreover, the first educational category that refer to individuals with higher education becomes insignificant and obtain a negative sign. This is probably emphasising our previous argument about the increased opportunity cost of highly educated people that is associated with a decision to transmit to self employment. In other words, even by keeping job satisfaction contact, someone with no education is more likely to become self-employed, since a highly educated person may engage into job search in order to find a new job consistent with his/her expectations which stem from the extensive direct and in direct cost of achieving such an education.

Finally, we also notice that the inclusion of job satisfaction reverses the sign for those who work as managers in their paid jobs. We perceive this as an indication that a manager is (on average) more happy with his/her job than a non manager. After controlling for job satisfaction, managers may wish to take advantage of their managerial experience in their previous paid job and start up their own firm.

5.6 Conclusion

The motivation behind this chapter has its roots on a well established result in the literature, that insufficient starting-up capital discourages potential entrepreneurs from creating their own business. Due to endogeneity thoughts concerning the correlation between someone's ability and initial wealth, attention has been placed on windfalls which can be considered to be exogenous. However a recent paper by Georgelis et al (2008) cast serious doubts on this and suggests that some variables associated with the so called "social capital" can significantly affect the probability of receiving a windfall. If these variables are also affecting the probability of transiting into self employment, then the endogeneity problem will still persist.

Our results indicate that some of the "social capital" variables are indeed significantly related to an increased likelihood of transiting into self employment. However, the windfall payments' coefficient remains virtually unchanged. We can therefore argue that the social capital variables act independently on the transition probability, even if they are associated with an increased probability of receiving a windfall. In other words, what matters for a movement into self employment is not the actual receipt of a windfall but the amount of money that results from the windfall. And this amount is intuitively separated from social capital characteristics like, for example, activity in social or voluntary community groups.

Table 5.2 – List of Variables and description

Sex	Dummy variable that takes the value '1' if the respondent is female
Age	Variable indicating the age of the respondent
agesquare	Squared version of Age
married	Dummy variable taking the value '1' if the respondent is married and '0' otherwise
payment	Variable indicating the amount of money the respondent received from windfalls
paymentsqr	Squared Version of payment
Race	Dummy variable that takes the value '1' if the respondent is white
Employed	Dummy variable showing if the respondent was employed before S/E transition with reference to being out of the labour force
Unemployed	Dummy variable showing if the respondent was unemployed before S/E transition with reference to being out of the labour force
Income	Amount of Labour and Non Labour income the respondent earned in the year prior to transition
children	Number of children in the household
educ1	Higher Education (MSc or PhD)
educ2	Any other higher qualifications
educ3	University Degree
educ4	Nursing qualifications
educ5	A levels
educ6	O levels
educ7	Cse , grade 2-5
educ8	Commercial qualifications
educ9	Other qualifications
div2	Annual income from dividends & interests : <1000 pounds
div3	Annual income from dividends & interests : 1000 – 2500 pounds
div4	Annual income from dividends & interests : > 2500 pounds
interdiv	Annual income from dividends & interests : > 2500 pounds **X** Windfall Payments
Duration	Duration (days) in labour market status prior to transistion
Father S/E	Takes the Value '1' if the father of the respondent has ever been self-employed
Mother S/E	Takes the Value '1' if the father of the respondent has ever been self-employed
Manager	Managerial Duties in current job
Supervisor	Supervisor/Foreman in current job
Insurance	Dummy variable taking the value '1' if the respondent received an insurance payment
Pension	Dummy variable taking the value '1' if the respondent received a pension
Accident	Dummy variable taking the value '1' if the respondent received money from an accident claim
Redundancy	Dummy variable taking the value '1' if the respondent received a redundancy payment
Bequest	Dummy variable taking the value '1' if the respondent received an inheritance
Lottery	Dummy variable taking the value '1' if the respondent received a gamble payment
Other	Dummy variable taking the value '1' if the respondent received any other 'windfall' payment
Orgab	Active in a trade union
Orgaf	Active in a religious group
Orgag	Active in a voluntary group
Orgah	Active in a community group
Orgai	Active in a social group
listen2	Is there anyone who would listen to you : Yes, one person.
listen3	Is there anyone who would listen to you : Yes, more than one person
Appreciate2	Is there anyone who appreciates you : Yes, one person
Appreciate3	Is there anyone who appreciates you : Yes, more than one person
crisis2	Is there anyone who would help you in a crisis : Yes, one person
crisis3	Is there anyone who would help you in a crisis : Yes, more than one person
Jbsat	Job Satisfaction from the current working place : Categorical responses from 1 to 7.

Table 5.3

Estimation Results

	collumn 1		collumn 2		collumn 3		collumn 4	
	coefficient	t-stat	coefficient	t-stat	coefficient	t-stat	coefficient	t-stat
variable								
sex	-0.35	9.45***	-0.36	9.52***	-0.36	9.18***	-0.38	7.56***
age	0.07	6.30***	0.07	6.29***	0.07	6.01***	0.04	2.84**
agesquare	-0.09	6.23***	-0.09	6.20***	-0.09	5.94***	-0.06	2.86**
married	-0.03	0.77	-0.03	0.75	-0.02	0.43	-0.11	2.16*
payment	0.77	2.48**	0.96	2.43*	0.80	2.50**	2.07	2.09*
paymentsqr	-0.30	1.52	-0.41	1.70	-0.32	1.52	-2.85	1.44
race	-0.07	0.82	-0.07	0.78	-0.03	0.37	-0.08	0.64
employed	0.17	3.16***	0.17	3.13***	0.19	3.38***	0.24	0.99
unemployed	0.42	5.65***	0.42	5.64***	0.42	5.59***	0.55	1.39
income	0.01	0.99	0.01	0.94	0.01	1.05	0.03	2.14*
children	0.03	1.26	0.03	1.27	0.04	1.48	0.02	0.65
educ1	0.16	1.52	0.16	1.53	0.16	1.47	-0.29	1.96*
educ2	0.08	1.32	0.08	1.36	0.09	1.37	-0.11	1.35
educ3	0.17	2.41**	0.17	2.41**	0.17	2.29*	-0.04	0.46
educ4	0.09	0.77	0.09	0.77	0.08	0.66	-0.28	1.42
educ5	0.13	1.88	0.13	1.92*	0.11	1.58	-0.03	0.27
educ6	0.07	1.08	0.07	1.13	0.06	0.93	-0.10	1.06
educ7	-0.03	0.29	-0.03	0.26	-0.03	0.27	-0.07	0.57
educ8	-0.34	1.39	-0.34	1.38	-0.30	1.24		
educ9	0.03	0.15	0.03	0.15	0.08	0.37	0.07	0.22
div2	-0.11	2.28*	-0.10	2.22*	-0.10	2.04*	-0.10	1.78*
div3	-0.08	0.66	-0.07	0.59	-0.05	0.44	-0.09	0.60
div4	0.03	0.63	0.04	0.67	0.03	0.54	0.03	0.44
interdiv	0.04	0.13	0.08	0.24	0.09	0.26	-0.61	0.47
duration	-0.02	2.13*	-0.02	2.29*	-0.02	2.01*	-0.06	4.30***
father S/E	0.15	2.60**	0.16	2.59**	0.15	2.49*	0.15	2.04*
mother S/E	0.09	0.82	0.08	0.83	0.08	0.80	0.00	0.02
manager	-0.10	2.18*	-0.10	2.21*	-0.12	2.42**	0.19	3.56***
supervisor	-0.27	4.43***	-0.27	4.41***	-0.28	4.33***	-0.02	0.28
Insurance			-0.06	0.49				
Pension			-0.20	0.82				
Accident			-0.05	0.26				
redundancy			-0.18	1.30				
Bequest			0.09	0.84				
Lottery			-0.03	0.59				
Other			-0.08	0.75				
Orgab					-0.23	3.74***		
Orgaf					-0.06	1.08		
Orgag					0.23	3.91***		
Orgah					-0.05	0.61		
Orgai					-0.11	2.36*		
listen2					-0.05	0.62		

Table 5.3 continued

listen3					-0.11	1.21		
appreciate2					0.02	0.25		
appreciate3					0.0010	0.02		
crisis2					0.04	0.46		
crisis3					0.10	1.10		
jbsat							-0.05	3.34
constant term	-3.13	12.76	-3.13	12.71	-3.13	11.69	-2.48	6.18
No of Obs	43807		43807		40871		31136	
LR χ2(d.f.)	297.42 (37)		302.39 (44)		322.94 (48)		178.68 (37)	
Log-likelihood	-3012.97		-3010.49		-2805.75		-1775.61	

Notes: Probability of entering self-employment at time t+1 given not self-employed at time t and windfall receipt at time t.
Probit Estimates with robust standard errors Year and nine regional dummy variables are also included
Reported t-stats are in absolute values - *,**,*** denote significance at 5%, 1% and <1% respectively.

Chapter 6

Concluding remarks

This work opens the discussion on some key domains in labour economics, under a British perspective. Using the well established British Household Panel Survey we provide new evidence for popular issues like the relationship between employment constraints and job mobility, job satisfaction, earning profiles and the effect of windfalls on the probability of transition into self-employment.

Chapter two is an attempt to examine if hour constraint can be a decisive parameter, strong enough to stimulate job mobility. We particularly focus on young employees who may have different preferences towards labour supply and different expectations. Our results indicate that a noticeable portion of employees who are less than 25 years old is constrained in the dimension of working hours. However, our econometric estimation clearly shows that this kind of restriction does not bind, as far as job mobility is concerned. For prime age employees (who report over-employment to a large extent) over-employment can not significantly explain part of the reasons that potentially stimulate job mobility. It is rather underemployment who has some statistically significant power.

This analysis, although very informative for the relationship between hour constraints and job mobility, can be even more precise in terms of the employees' preferences. Undoubtedly, for some workers, working hours can be a very important parameter that is correlated with job satisfaction and potentially with job mobility. An extension we suggest on this line would be to explicitly take into account the priorities that each worker places upon the attributes of his/her job. In this sense, a researcher can test if workers who consider working hours as very important in their subjective evaluation are more likely to change job if they are constrained. Again, a differentiation between young and older employees or between men and women could give very useful results.

Chapter three discusses job satisfaction in the UK. The extensive use of subjective covariates is evident throughout the chapter in an attempt to provide a more accurate view on this issue. In particular we use (among other covariates) satisfaction with payment, satisfaction we security and satisfaction with the work it self. We challenge the objection that these subjective covariates may contain noise by arguing that they are essentially picking different things. In deed, adding one of these variables at a time has an effect on only those covariates that are intuitively related with them.

Additionally, for the completeness of analysis, we estimate a job satisfaction equation in a more conventional manner. Instead of adding subjective covariates as before, we include the wage and the reference wage. The latter is derived from a wage equation and aims to capture the potential dissatisfaction of the employee if his/her compensation is less than the average one for a worker with the same characteristics. Our results are in line with previous studies and clearly emphasize that the satisfaction of individuals is affected by the surrounding working environment.

An issue of consideration and a proposal for future research is an attempt to link chapter two and chapter three. In this respect we would like to examine if those workers who are constrained in the hours they work and do not change job, receive some kind of compensation so that their total job satisfaction level remains above the subjective level which could stimulate job mobility. Although the notion behind a compensating differential is widely accepted in cases where the working place can be dangerous or unhealthy for the worker, there is no reason to have a priori beliefs that this is the only case where a compensating differential is applicable. On the contrary, workers in jobs that are not necessarily manual or life threatening are well possible to exchange adverse working conditions (like hour constraints) for other job characteristics. For instance, promotion opportunities or non monetary benefits can be sufficient for some workers to cancel out any negative effects from other unpleasant working aspects. Consequently, the analysis should be in the position to take into account the preferences of the individuals

and conclude if individuals with roughly the same satisfaction levels receive different wages conditional upon their preferences, their satisfaction with the job sub-domains and after controlling for the usual parameters like education, demographics and so forth.

Chapter 4 is concerned with the choice between the public and the private sector and estimates the relevant wage profiles for each of them. We run a probit regression to find evidence that being a woman, member of a union, senior age employee and well educated increases the probability of working in the public sector. We then take into account these results in order to correct for potential self-selectivity in choosing either sector. The estimated earnings profiles clearly indicate that the private sector offers a steeper earnings profile than the public sector. We attribute these differences to the different motivational basis for selecting to be a public sector employee.

Finally, our attention in chapter 5 is placed upon the effect that windfalls have on the probability of transiting from paid employment to self-employment. This issue has been thoroughly examined in the past since windfalls were considered to be exogenously determined and consequently not correlated with any special ability or inclination to run a business successfully. Moreover, if windfalls were found to be positively related to the probability of starting up a business, then additional validity would be placed on the liquidity constraints hypothesis. Our scope was to simultaneously consider the receipt of windfalls and social capital variables since recent research suggested a correlation between them. Our results indicated that some of the social capital variables significantly affect the probability of becoming an entrepreneur but not through the windfall channel. Consequently, although social capital may be affecting the probability of receiving a windfall, it acts independently on the probability of a self employment transition.

REFERENCES

ABRAHAM, K., and H. FARBER (1987): "Job Duration Seniority and Earnings," *American Economic Review*, 77, 278-297.

AHN, N., and J. R. GARCIA (2004): "Job Satisfaction in Europe," *FEDEA (Madrid)*.

AKERLOF, G. (1982): "Labor Contracts as Partial Gift Exchange," *Quarterly Journal of Economics*, 84, 543-69.

AKERLOF, G., and W. DICKENS (1982): "The Economic Consequences of Cognitive Dissonance," *American Economic Review*, 72, 307-319.

AKERLOF, G., and J. YELLEN (1986): "Efficiency Wages Models of the Labor Market."

AKERLOF, G. A., A. K. ROSE, J. L. YELLEN, L. BALL, and R. HALL (1988): "Job Switching and Job Satisfaction in the U.S. Labor Market," *Brookings Papers on Economic Activity*, 1988, 495-594.

ALTONJI, J., and C. PAXSON (1988): "Labor Supply Preferences, Hours Constraints and Hours Wage Trade-Offs," *Journal of Labor Economics*, 6.

— (1992): "Labor Supply, Hours Constraints and Job Mobility," *The Journal of Human Resources*, XXVII, 256-278.

ANNE BEESON ROYALTY (1998): "Job-to-Job and Job-to-Nonemployment Turnover by Gender and Education Level," *Journal of Labor Economics,*, 16.

ASTEBRO, T., and I. BERNHARDT (1999): "Bank Loans as Predictors of Small Business Start-up Survival," US Department of Commerce.

AUER, P., and S. CAZES (2003): "The Resilience of the Long-Term Employment Relationship," *in Employment Stability in an Age of Flexibility*.

BACH, S. (2002): "Public-Sector Employment Relations Reform under Labour: Muddling Through on Modernization*?," British Journal of Industrial Relations ,* 40, 319-339

BARLING, J., and E. KELLOWAY (1999): "Young Workers: Varieties of Experiences," *American Psychological Association*.

BARTEL, A., and N. SICHERMAN (1998): "Technological Change and the Skill Acquisition of Young Workers," *Journal of Labor Economics*, 16.

BECKER, G. (1975): *Human Capital*. New York: Columbia University Press.

BECKER, G., and G. STIGLER (1974): "Law Enforcement, Malfeasance and Compensation of Enforcers," *Journal of Legal Studies*, 3.

BELL, D., and R. HART (1998): "Workin Time in Great Britain, 1975-1994: Evidence from the New Earnings Survey Panel Data," *Journal of the Royal Statistical Society. Series A*, 161.

BELLANTE, D., and A. LINK (1981): "Are Public Sector Workers More Risk Averse Than Private Sector Workers," *Industrial and Labor Relations Review*, 34, 408-412.

BENDER, K., and P. J. SLOANE (1998): "Job Satisfaction, Trade Unions, and Exit-Voice Revisited," *industrial and Labor Relations Review*, 51, 222-240.

BENN, S., and G. GAUS (1983): *Public and Private in Social Life*. New York: St. Martin's Press.

BERTRAND, M., and S. MULLAINATHAN (2001): "Do People Mean What They Say? Implications for Subjective Survey Data," *American Economic Review*, 91, 67-72.

BLACK, R. (1985): "An Analysis of Workers' Choice between Employment in the Public and Private Sectors," *Industrial and Labor Relations Review*, 38, 211-224.

BLANC, R. (1989): "The Role of Part-Time Work in Women's Labor Market Choices over Time," *American Economic Review*, 79, 295-299.

BLANCHFLOWER, D. (2000): "Self-Employment in OECD Countries," *Labour Economics*, 7, 471-505.

— (2004): "Self-Employment: More May Not Be Better," *NBER Working Paper Series*.

BLANCHFLOWER, D., and A. BRYSON (2004): "The Union Wage Premium in the US and the UK." *Paper for the Industrial Relations research association, 56th annual meeting, San Diego*.

BLANCHFLOWER, D., and A. OSWALD (1998): "What Makes an Enterpreneur?," *Journal of Labor Economics*, 16, 26-60.

— (1999): "Well Being, Insecurity and the Decline of American Job Satisfaction."

— (2004): "Well-Being over Time in Britain and the USA," *Journal of Public Economics*, 88, 1359-1386.

BLINDER, A. (1973): "Wage Discrimination: Reduced Form and Structural Estimates," *The Journal of Human Resources*, 8, 436-55.

BLUNDELL, R., M. BREWER, and M. FRANCESCONI (2005): "Job Changes, Hours Changes and Labour Market Flexibility:Panel Data Evidence for Britain." IFS Working Paper

BLUNDELL, R., L. DEARDEN, A. GOODMAN, and H. REED (2000): "The Return to Higher Education in Britain: Evidence from a British Cohort," *The Economic Journal*, 110.

BLUNDELL, R., and T. MCCARDY (1999): "Labor Supply: A Review of Alternative Approaches," in *Handbook of Labor Economics*, ed. by O. Ashenfelter, and D. Card.

BOES, S. (2006): "Regoprob:Stata Module to Estimate Random Effects Generalized Ordered Probit Models," *Statistical Software components, Boston College Department of Economics*, S456604.

BOHEIM, R., and M. TAYLOR (2002): "The Search for Success: Do the Unemployed Find Stable Employment?," *Labour Economics*, 9, 717-735.

— (2004): "Actual and Preferred Working Hours," *British Journal of Industrial Relations*, 42, 149-166.

BOOTH, A. (1995): *The Economics of Trade Unions*. Cambridge University Press.

BOOTH, A., and J. FRANK (1996): "Seniority, Earnings and Unions," *Economic, New Series*, 63, 673-686.

BORJAS, G. (1979): "Job Satisfaction, Wages and Unions," *The Journal of Human Resources*," 14, 21-40.

BORJAS, G. (1982): "The Politics of Employment Discrimination in the Federal Bureaucracy," *Journal of Law and Economics*, 25, 271-99.

BROWN, D., and S. MCINTOSH (1998): "If You Are Happy and You Know It...Job Satisfaction in the Low Wage Service Sector."

BROWN, S., and J. SESSIONS (2006): "Some Evidence on the Relationship between Performance-Related Pay and the Shape of the Experience=Earnings Profile," *Southern Economic Journal*, 72, 660-676.

BROWN, S., J. SESSIONS, and D. WATSON (2006): "The Contribution of Hours Constraints to Working Poverty in Britain," *Journal of Population Economics*.

BRUNI, L., and R. SUGDEN (2007): "The Road Not Taken : How Psychology Was Removed from Economics and How It Might Be Brought Back," *The Economic Journal*, 117, 146-173.

BRYSON, A., L. CAPPELLARI, and C. LUCIFORA (2004): "Does Union Membership Really Reduce Job Satisfaction ?," *British Journal of Industrial Relations*, 42, 439-459.

BURGESS, S., and M. RATTO (2003): "The Role of Incentives in the Public Sector: Issues and Evidence," *Oxford Review of Economic Policy*, 19, 285-300.

BURKE, A., F. FITZROY, and M. NOLAN (2000): "When Less Is More : Distinguishing between Entrepreneurial Choice and Performance," *Oxford Bulletin of Economics and Statistics*, 62, 565-587.

— (2002): "Self-Employment, Wealth and Job Creation : The Role of Gender, Non-Pecuniary Motivation and Entrepreneurial Ability," *Small Business Economics*, 19, 255-270.

BUTLER, J. S., and R. MOFFITT (1982): "A Computationally Efficient Quadrature Procedure for the One-Factor Multinomial Probit Model," *Econometrica*, 50, 761-764.

BUTLER, R. (1982): "Estimating Wage Discrimination in the Labor Market," *Journal of Human Resources*, 17, 606-621.

C.B.I. (1994): "Flexible Labour Markets, Who Pays for Training ?."

CAMPBELL, C. M. (1994): "Wage Change and the Quit Behavior of Workers: Implications for Efficiency Wage Theory," *Southern Economic Journal*, 61, 133-148.

CARD, D. (1991): "Inertemporal Labor Supply: An Assessment," *NBER Working Paper Series*, Working paper No. 3602.

— (1999): "The Causal Effect of Education on Earnings," in *Handbook of Labor Economics*, ed. by O. Ashenfelter, and D. Card.

CHAMBERLAIN, G. (1980): "Analysis of Covariates with Qualitative Data," *Review of Economic Studies*, 47.

CLARK, A. (1996): "Job Satisfaction in Britain," *British Journal of Industrial Relations*, 34, 189-217.

— (1997): "Job Satisfaction and Gender: Why Are Women So Happy Ay Work ?," *Labour Economics*, 4, 341-372.

— (2001): "What Really Matters in a Job? Hedonic Measurement Using Quit Data," *Labour Economics*, 8, 223-242.

CLARK, A., and A. OSWALD (1994): "Unhappiness and Unemployment," *The Economic Journal*, 104, 648-659.

— (1996): "Satisfaction and Comparison Income," *Journal of Public Economics*, 65.

CLARK, A., A. OSWALD, and P. WARR (1996): "Is Job Satisfaction U-Shaped in Age ?," *journal of Occupational and Organizational Psychology*, 69, 75-81.

CLARK, A. E., Y. YEORGELLIS, and P. SAFNEY (1998): "Job Satisfaction, Wage Changes and Quits: Evidence from Germany," *Research in Labor Economics*, 17, 95-122.

CLARK, R., and N. OGAWA (1992): "Employment Tenure and Earnings Profiles in Japan and the United States: Comment," *The American Economic Review*, 82, 336-45.

CREWSON, P. (1997): "Public-Service Motivation:Building Enpirical Evidence of Incidence and Effect," *Journal of Public Administration Research and Theory*, 7, 499-518.

D'ADDIO, A. C., T. ERIKSSON, and P. FRIJTERS (2003): "An Analysis of the Determinants of Job Satisfaction When Individuals' Baseline Satisfaction Levels May Differ," *Centre for Applied Microeconometrics-University of Copenhagen*, 16.

DEARDEN, L. (1999): "Qualifications and Earnings in Britain: How Reliable Are Conventional Ols Estimates F the Returns in Education?," *IFS working paper*.

DEARY, I. J., L. J. WHALLEY, J. LEMMON, J. CRAWFORD, and S. STARR (2000): "The Stability of Individual Differences in Mental Ability from Childhood to Old Age. Follow-up of the 1932 Scottish Mental Survey," *Intelligence*, 28, 49-55.

DIAZ-SERRANO, L., and J. A. C. VIEIRA (2005): "Low Pay, Higher Pay and Job Satisfaction within European Union: Empirical Evidence from Fourteen Countries," *IZA Discussion Paper Series*, 1558.

— (2005): "Low Pay, Higher Pay and Job Satisfaction within the European Union: Empirical Evidence from Fourteen Countries," *iZA Discussion Paper Series*, 1558.

DICKENS, W. T., and S. J. LUNDBERG (1993): "Hours Restrictions and Labor Supply," *International Economic Review*, 34, 169-192.

DIENER, E., and R. E. LUCAS (1999): "Personality and Subjective Well-Being," in *Well-Being:The Foundations of Hedonic Psychology*, ed. by D. Kahneman, E. Diener, and N. Schwarz. New York: Russell Sage Foundation.

DIXIT, A. (2002): "Incentives and Organizations in the Public Sector: An Interpretative Review," *The Journal of Human Resources"*, 37, 696-727.

DOLTON, P. J., and G. H. MAKEPEACE (1990): "Self Employment among Graduates," *Bulletin of Economic Research*, 42, 35-53.

DONOHUE, S. M., and J. S. HEYWOOD (2004): "Job Satisfaction and Gender: An Expanded Specification from the Nlsy," *International Journal of Manpower*, 25, 211-234.

DUGGAN, C. (1998): "Self Employment in the United Kingdom and Ireland. Current Trends, Policies and Programmes," *http://cerf.mcmaster.ca/papers/seconf/ire-uk/pdf*.

EHRENBERG, R., and J. SCHWARZ (1986): "Public-Sector Labor Markets," in *Handbook of Labor Economics*, ed. by O. Ashenfelter, and R. Layard.

EUROPEAN COMISSION (2000): *Flash Eurobarometer - Entrepreneurship*.

EUWALS, R. (1999): "Female Labour Supply, Flexibility of Working Hours, and Job Mobility in the Netherlands," *IZA Discussion Paper Series*.

EVANS, D., and B. JOVANOVIC (1989): "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, 97, 808-827.

EVANS, D., and L. LEIGHTON (1989): "Some Empirical Aspects of Entrepreneurship" *American Economic Review*, 79, 519-535.

FERRER-I-CARBONELL, A., and P. FRIJTERS (2004): "How Important Is Methodology for the Estimates of the Determinants of Happiness," *The Economic Journal*, 114, 641-659.

FLINN, C. (1986): "Wages and Job Mobility of Young Workers," *Journal of Political Economy*, 94.

FRABK, J. (1985): "Trade Union Efficiency and Overemployment with Seniority Wage Scales," *The Economic Journal*, 95, 1021-1034.

FRANK, R., and R. HUTCHENS (1993): "Wages, Seniority, and the Demand for Rising Consumption Profiles" *Journal of Economic Behavior & Organization* 21, 251-276.

FREEMAN, R. B. (1978): "Job Satisfaction as an Economic Variable," *The American Economic Review*, 68, 135-141.

— (1979): "The Effect of Demographic Factors on Age-Earnings Profiles," *The Journal of Human Resources*, 14, 289-318.

— (1986): "Unionism Comes to the Public Sector," *Journal of Economic Literature*, 24, 41-86.

— (1995) : "The Future for Unions in Decentralized Collective Bargaining Systems: US and UK Unionism in an Era of Crisis, "*British Journal of Industrial Relations*, 33, 519-536

— (2005): "Labour Market Institutions without Blinders:The Debate over Flexibility and Labour Market Performance," *NBER Working Paper Series*.

FREEMAN, R. B., and J. MEDOFF (1984): *What Do Unions Do?* New York: Basic Books.

FRIJTERS, P., J. P.HAISKEN-DENEW, and M. A.SHIELDS (2004): "Investigating the Patterns and Determinants of Life Satisfaction in Germany Following Reunification," *The Journal of Human Resources*.

GEORGELLIS, Y., J. SESSIONS, and N. TITSIANIS (2005): "Windfalls, Wealth, and the Transition to Self-Employment," *Small Business Economics*, 25, 407-428.

GEORGELLIS, Y., J. SESSIONS, and N. TSITSIANIS (2008): "Social Capital and Windfalls : Empirical Evidence," *Economics Letters*.

GLYN, A. (2003): "Labour Market Deregulation and Europe's Employment Problems," *presented on "Recession, Inflation and the Prospects for Equitable Growth "AEA/URPE session*.

GORDON, M. E., and A. S. DENISI (1995): "A Re-Examination of the Relationship between Union Membership and Job Satisfaction," *Industrial and Labor Relations Review*, 48, 222-236.

GREENE, W. (2004): "Convenient Estimators for the Panel Probit Model:Further Results " *Empirical Economics*, 29, 21-47.

— (2008): *Econometric Analysis*. Pearson.

GREGG, P., S. MASHIN, and A. MANNING (2000): "Mobility and Joblessness," *London School of Economics, CEPR*.

GREGORY, R., and J. BORLAND (1999): "Recent Developments in Public Sector Labor Markets," in *Handbook of Labor Economics*, ed. by O. Ashenfelter, and D. Card.

HAAN, P. (2005): "A Dynamic Discrete Choice Model of Labor Supply, the Case of Germany."

HAMERMESH, D. S. (1977): "Economic Aspects of Job Satisfaction," *in Essays in Labor Market Analysis, Wiley, New York*.

— (2001): "The Changing Distribution of Job Satisfaction," *The Journal of Human Resources*, 36, 1-30.

HAMILTON, B. (2000): "Does Entrepreneurship Pays ? An Empirical Analysis of the Returns to Self-Employment," *Journal of Political Economy*, 108, 604-631.

HARPER, B. (1995): "Male Occupational Mobility in Britain," *Oxford bulletin of Economics and Statistics*, 57, 349-369.

HASHIMOTO, M. (1981): "Firm-Specific Human Capital as a Shared Investment," *American Economic Review*, 71, 457-482.

HASHIMOTO, M., and J. RAISIAN (1985): "Employment Tenure and Earnings Profiles in Japan and the United States," *The American Economic Review*, 75, 721-735.

HECKMAN, J. (1974): "Life Cycle Consumption and Labor Supply: An Explanation of the Relationship between Income and Consumption over the Life Cycle," *The American Economic Review*, 64, 188-194.

— (1979): "Sample Selection Bias as a Specification Error," *Econometrica*, 47, 153-161.

HENLEY, A., and D. THOMAS (2001): "Public Service Employment and the Public-Private Wage Differential in British Regions," *Regional Studies*, 35, 229-240.

HIGGINS, C., L. DUXBURY, and K. LEA-JOHNSON (2001): "Part-Time Work for Women: Does It Really Help Balance Work and Family?," *Human Resource Management*, 39.

HOLTZ-EAKIN, D., D. JOULFAIAN, and H. ROSEN (1994a): "Sticking It Out: Entrepreneurial Survival and Liquidity Constraints," *Journal of Political Economy*, 102, 53-75.

— (1994b): "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics*, 25, 334-347.

JONES, D., and G. MAKEPEACE (1996): "Equal Worth, Equal Opportunities:Pay and Promotion in an Internal Labour Market," *The Economic Journal*, 106, 401-409.

KAHN, S., and K. LANG (1991): "The Effects of Hours Constraints on Labor Supply Estimates," *Review of Economics and Statistics*, 73, 605-611.

— (1992): "Constraints on the Choice of Work Hours: Agency Vs. Specific-Capital," *Journal of Human Resources*, 27, 661-678.

— (1995): "Sources of Hours Constraints: Evidence from Canada," *Canadian Journal of Economics*, 28, 914-928.

— (1996): "Hours Constraints and the Wage/Hou Locus," *Canadian Journal of Economics*, 29, 71-75.

KARL, K., and C. SUTTON (1998): "Job Values in Today's Workforce : A Comparison of Public and Private Sector Employees," *Public Personell Management*, 27, 515-27.

KATZ, L., and A. KRUEGER (1991): "Changes in the Structure of Wages in the Public and Private Sectors," in *Research in Labor Economics*, ed. by R. Ehrenberg. Greenwitch: JAI Press.

KILLINGSWORTH, M. (1983): *Labor Supply*. Cambridge University Press.

KOTLIKOFF, L., and J. GOKHALE (1992): "Estimating a Firm's Age-Productivity Profile Using the Present Value of Workers' Earnings," *The Quarterly Journal of Economics*, 107, 1215-42.

KRUEGER, A., and L. SUMMERS (1988): "Efficiency Wages and the Inter-Industry Wage Structure," *Econometrica*, 56, 259-293.

LANDERS, R., J. REBITZER, and L. TAYLOR (1996): "Rat Race Redux: Adverse Selection in the Determination of Work hours in Law Firms," *American Economic Review*, 86, 329-348.

LAZEAR, E. (1979): "Why Is There a Mandatory Retirement?," *Journal of Political Economy*, 87, 1261-84.

— (1981): "Agency, Earnings Profiles,Productivity and Hours Restrictions," *American Economic Review*, 71, 606-20.

LAZEAR, E., and R. MOORE (1984): "Incentives, Productivity and Labor Contracts," *Quarterly Journal of Economics*, 99, 275-95.

LEE, R., and E. R. WILBUR (1985): "Age, Education, Job Tenure, Salary, Job Characteristics, and Job Satisfaction: A Multivariate Analysis," *Human Relations* 38, 781-791.

LEWIS, J. (2001): "The Decline of the Male Breadwinner Model: Implications for Work and Care," *Soc Pol*, 8, 152-169.

LINDH, T., and H. OHLSSON (1996): "Self-Employment and Windfall Gains: Evidence from the Swedish Lottery," *The Economic Journal*, 106, 1515-1526.

LIU, Q., and D. A. PIERCE (1994): "A Note on Gauss-Hermite Quadrature," *Biometrica*, 81, 624-629.

LOCKE, E. (1976): "The Nature and Causes of Job Satisfaction," in *The Handbook of Industrial and Organizational Psychology*, ed. by M. Dunnette. New York.

LOEWENSTEIN, G., and N. SICHERMAN (1991): "Do Workers Prefer Increasing Wage Profiles?," *Journal of Labor Economics*, 9, 67-84.

LYDON, R., and A. CHEVALIER (2002): "Estimates of the Effect of Wages on Job Satisfaction," *Centre for Economic Performance*.

MACURDY, T. (1981): "An Empirical Model of Labor Supply in a Life-Cycle Setting," *Journal of Political Economy*, 89, 1059-1085.

MANSKI, C. (1989): "Anatomy of the Selection Problem," *The Journal of Human Resources*, 24, 343-360.

— (1995): *Identification Problems in the Social Sciences*. Harvard University Press.

MARTINEZ-GRANADO, M. (2005): "Testing Labour Supply and Hours Constraints," *Labour Economics*, 12, 321-343.

MCINTOSH, S. (2006): "Further Analysis on the Returns to Academic and Vocational Qualifications," *Oxford Bulletin of Economics and Statistics*, 62, 225-251.

MCLAUGHLIN, K. (1991): "A Theory of Quits and Layoffs with Efficient Turnover," *Journal of Political Economy*, 99, 1-29.

MERPHY, K., and F. WELCH (1990): "Empirical Age-Earnings Profiles," *Journal of Labor Economics*, 8, 202-29.

MINCER, J. (1974): *Schooling, Experience and Earnings*. New York: Columbia University Press.

— (1986): "Wage Changes in Job Changes," *NBER Working Paper Series*.

MOFFITT, R. (1999): "New Developments in Econometric Methods for Labor Market Analysis," in *Handbook in Labor Economics*, ed. by O. Ashenfelter, and D. Card.

NEUMARK, D. (1995): "Are Rising Earnings Profiles a Forced-Saving Mechanism," *The Economic Journal*, 105, 95-106.

NICKELL, S. (1997): "Unemployment and Labor Market Rigidities: Europe Versus North America," *The Journal of Economic Perspectives*, 11.

NICKELL, S., L. NUNZIATA, and W. OCHEL (2005): "Unemployment in the OECD since the 1960's. What Do We Know?," *The Economic Journal*, 115, 1-27.

NICOLETTI, C. (2006): "Differences in Job Dissatisfaction across Europe," *ISER Working Paper*.

NICOLETTI, C., and F. PERACCHI (2002): "A Cross-Country Comparison of Survey Nonparticipation in the Echp," *Working Papers of the Institute for Social and Economic Research, Colchester: University of Essex*.

NICOLETTI, G., S. SCARPETTA, and O. BOYLAUD (2000): "Summary Indicators of Product Market Regulation with an Extension to Employment Protection Legislation," *Economics department, OECD, Paris*, Working paper No 226.

OECD (1994): *Jobs Study, Part Ii: The Adjustment Potential of the Labour Market*. Paris.

— (2004): *Employment Outlook*. Paris.

OSWALD, A. (1985): "The Economic Theory of Trade Unions: An Introductory Survey," *The Scandinavian Journal of Economics*, 87, 160-193.

— (1996): "Happiness and Economic Performance," *The Economic Journal*, 107, 1815-1831.

— (1997): "The Missing Piece of the Unemployment Puzzle," *Inaugural Lecture, University of Warwick*.

— (2002): "Are You Happy at Work? Job Satisfaction and Work-Life Balance in the Us and Europe," *University of Warwick*.

PAGANI, L. (2003): "Why Do People from Southern Italy Seek Jobs in the Public Sector?," *Labour* 17, 63-91.

PARENT, D. (2000): "Industry-Spesific Capital and the Wage Profile: Evidence from the National Longitudinal Survey of Youth and the Panel Study of Income Dynamics," *Journal of Labor Economics*, 18, 306-322.

PERRY, J., and H. RAINEY (1988): "The Public-Private Distinction in Organization Theory: A Critique and Research Strategy," *Academy of Management Review*, 13, 182-201.

PISSARIDES, C. (2001): "Employment Protection," *Labour Economics*, 8.

RAINEY, H. (1982): "Reward Preferences among Public and Private Managers: In Search for the Service Ethic," *American Review of Public Administration*, 16, 288-302.

RODGERS, G. (May 2006): "Labour Market Flexibility and Decent Work," *Presentation at UNDESA Development Forum on productive employment and decent work*.

ROSEN, S. (1981): "The Economics of Superstars," *American Economic Review*, 71, 845-858.

RUBIN, D. B. (1976): "Inference and Missing Data," *Biometrica*, 71, 599-607.

SAINT-PAUL, G. (1993): "On the Political Economy of Labour Market Flexibility," *Oxford University Press*.

SCHWARTZMAN, A. E., D. GOLD, D. ANDRES, T. Y. ARBUCKLE, and J. CHAIKELSON (1987): "Stability and Intelligence. A 40 Year Follow-Up," *Canadian Journal of Psychology*, 41, 244-256.

SELIGMAN, M. (1975): *Helplessness: On depression, development and death,"* W.H.Freeman, San Francisco.

SHIMER, R. (2001): "The Impact of Young Workers on the Aggregate Labor Market," *Quarterly Journal of Economics*, 116.

SOUSA-POSA, A., and F. HENNEBERGER (2002): "An Empirical Analysis of Working-Hours Constraints in Twenty-One Countries," *Review of Social Economy*, LX.

SOUSA-POSA, A., and A. SOUSA-POSA (2000): "Taking Another Look at the Gender/Job-Satisfaction Paradox," *Kyklos*, 53, 135-152.

SOUZA-POZA, A., and A. A. SOUZA-POZA (2003): "Gender Differences in Job Satisfaction in Great Britain, 1991-2000: Permanent or Transitory?," *Applied Economic Letters*, 10, 691-694.

STEVENS, P. A. (2005): "The Job Satisfaction of English Academics and Their Intentions to Quit Academe," *National Institute fo Economic and Social Research*.

STEWART, M., and J. SWAFFIELD (1997): "Constraints on the Desired Hours of Work of British Men," *The Economic Journal*, 107.

STIGLITZ, J., and A. WEISS (1981): "Credit Rationing in Markets with Imperfect Competition," *American Economic Review*, 71, 393-410.

TAYLOR, M. (1996): "Earnings, Independence or Unemployment: Why Become Self-Employed," *Oxford Bulletin of Economics and Statistics*, 58, 253-265.

— (2001): "Self Employment and Windfall Gains in Britain: Evidence from Panel Data. ," *Economica*, 68, 539-565.

— (2006): "Tell Me Why I Don't Like Mondays: Investigating Day of the Week Effects on Job Satisfaction and Psychological Well-Being," *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 169, 127-142.

TAYLOR, M. F. (2007): "British Household Panel Survey User Manual " *Colchester : University of Essex*, A: Introduction, Thechnical Report and Appendices.

TERZA, J. (1987): "Estimating Linear Models with Ordinal Qualitative Regressors," *Journal of Econometrics*, 34, 275-291.

TOPEL, R. (1991): "Specific Capital, Mobility and Wages: Wages Rise with Seniority," *Journal of Political Economy*, 99, 145-176.

VAN-PRAAG, B. M. S. (1991): "Ordinal and Cardinal Utility: An Integration of the Two Dimensions of the Welfare Concept " *Journal of Econometrics*, 50, 69-89.

VAN PRAAG, B.M.S., P. FRIJTERS, and A. FERRER-I-CARBONELL (2003): "The Anatomy of Subjective Well-Being," *Journal of Economic Behavior & Organization*, 51, 29-49.

VAN PRAAG, B. M. S., and A. FERRER-I-CARBONELL (2004): *Hapiness Qualified*. Oxford: Oxford University Press.

VARIAN, H. (1992): *Microeconomic Analysis*. Norton.

VERHOFSTADT, E., and E. OMEY (2003): "The Impact of Education on Jon Satisfaction in the First Job," *Faculteit Economie En Bedrijfskunde Working Paper*.

VROOM, V. H. (1964): *Work and Motivation*. New York: Wiley.

WATSON, D., WEBB, R., and A. BIRDI (2005): " Coping with Low Pay : Cognitive Dissonance and Persistent Disparate Earnings Profiles, " *Theory and Decision*, 57, 367-378

WEISS, A. (1980): "Job Queues and Layoffs in Labor Markets with Flexible Wages," *Journal of Political Economy*, 88.

WINKELMANN, L., and R. WINKELMANN (1998): "Why Are the Unemployed So Unhappy? Evidece from Panel Data," *Economica*, 65, 1-15.

WOOLDRIDGE, J. (2006): *Introductory Econometrics*. Thomson.

WRIGHT, B. (2001): "Public Sector Work Motivation: A Review of the Current Literature and a Revised Conceptual Model," *Journal of Public Administration Research and Theory*, 11, 559-586.